Timber Management Planning Manual for Crown Lands in Ontario

Ontario

Ministry of
Natural
Resources

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PREFACE

Forest management of Crown land in Ontario is the responsibility of the Minister of Natural Resources and has been regulated by legislation and technical manuals for many years. The requirement to plan was first legislated in the Forest Management Act of 1947. This act directed all companies with long-term licences to prepare management plans for their areas. The province also required management plans to be prepared by the Crown for areas not under long-term licence. The Manual of Timber Management (1948; revised in 1951 and 1958) and the Manual of Forest Management Plan Requirements for the Province of Ontario (1962; with a second edition in 1977) outlined the planning requirements.

The Forest Management Act was consolidated under the new Crown Timber Act (CTA) in 1953. The CTA was further amended in 1979 to permit the Minister of Natural Resources to enter into Forest Management Agreements (FMAs) with companies. Companies with FMAs become responsible for carrying out all aspects of timber management. A new Forest Management Manual (1980) was prepared for use with FMAs. The Ministry of Natural Resources (MNR) thus had in place two manuals outlining the planning requirements for the different types of forest land tenure.

The passage of the Environmental Assessment Act (EAA) in 1975 required that the MNR modify its system of timber management planning for Crown land to allow opportunity for public consultation and for consideration of the environmental implications of management activities. The decision was made in 1983 to combine the two planning manuals and to produce the Timber Management Planning Manual for Crown Land in Ontario which integrates the requirements of the EAA and is suitable for all Crown lands, regardless of tenure. It was also decided to consolidate short-term operational plans into one twenty-year management plan to be renewed each five years for another period of twenty years. This consolidation would maintain the longer planning horizon while including sufficient flexibility to accommodate operational changes at five-year intervals.

1.0 INTRODUCTION

Timber management is one of several resource management activities administered by the Ministry of Natural Resources (MNR). Timber Management Plans state objectives, methods, and locations of activities for forest resource management. These plans are prepared at the field level by those responsible for the resource on a particular area of forested land.

With minor exceptions, the Crown forest of the province is subdivided for timber management purposes into Crown management units, company management units, and Forest Management Agreement (FMA) forests. The boundaries of these areas are established by order in council. Timber Management Plans are required for each management area. Annually, schedules of work to be carried out during a particular year are also required.

The direct responsibility for the preparation of Timber Management Plans rests with the Crown for Crown management units and with the company, with input from the MNR, for company management units and FMA forests. Each plan must be prepared under the supervision of a professional forester and must be so certified.

The objective of the forest management program on Crown land in Ontario is "to provide for an optimum continuous contribution to the economy by forest-based industries consistent with sound environmental practices and to provide for other uses of the forest". The purpose of timber management planning is to organize the activities of harvest, renewal, and the maintenance of the forest to ensure the availability of forest products from an area consistent with this objective.

It is the policy of the MNR to recognize and take into account other resource values in addition to timber values when making decisions concerning timber management operations. The planning of these operations, therefore, must accommodate other resource values. The aim is to achieve a balance of the benefits received from any specific area and to identify overlapping interests early in the planning process so that potential conflicts can be identified and resolved.

District Land Use Guidelines (DLUG) set the framework for all district resource management planning. The targets and strategies contained within these guidelines have been developed for all MNR programs, and many integrated decisions have been based on them. These decisions (such as a general allocation of land or water resources to a particular use or combination of uses) provide some of the bases upon which other, more detailed, decisions can be built during the resource management planning process.

Formal opportunities are provided at various stages in the planning process for the participation of other government ministries and agencies, interest groups, or individuals. These opportunities allow organizations or individuals to supply information, identify concerns, comment on proposals, and determine to what extent their comments were considered in decisions regarding identified areas of concern.

The timber management planning process recognizes and considers all interests in the planning area that might overlap with timber management. Accommodation of interests is achieved by multi-disciplinary planning teams, an internal review of the planning documents by all involved programs, and formal procedures to secure public input. The open nature of the planning process provides the opportunity for all views to be made known and ensures that decisions made by the MNR reflect the views that are expressed.

Timber Management Plans are prepared for twenty-year periods and must set out the objectives and strategies for management. The aim of these plans is to ensure a continuous flow of forest products while accommodating the requirements of other forest users. At the same time, the Timber Management Plan identifies, for the first five years, where forest operations will be carried out and how they will be conducted.

Every five years a new Timber Management Plan is produced which outlines the objectives and strategies for a twenty-year period and provides operational detail for the first five years. In this manner long-term direction combined with short-term detail is always specified for forest management operations and the flexibility to adapt to changing conditions and needs is provided.

Each Timber Management Plan receives input from and gives input to other relevant plans that are being developed or are approved. Linkages to other resource management plans of the MNR, plans of other provincial agencies such as those involving highways or tourism, and plans of municipalities must be considered in the timber management planning process.

2.0 PLAN PRODUCTION AND REVIEW

This section outlines the process involved in the production of a Timber Management Plan. While most of the material presented is intended to serve as a guide to the forester who is responsible for the production of a plan, the production of supplementary documentation, MNR internal review and approval, and public consultation (which is further detailed in Section 3.0) are process requirements. Failure to comply with these requirements can result in delays in plan approval and in operations.

Implementation of the planning process is undertaken or co-ordinated through the MNR's district offices; district managers are responsible for ensuring compliance with the requirements of the process in the production of all Timber Management Plans. These responsibilities apply whether the plans are produced by the MNR (for Crown management units) or by forest companies (for company units or FMA forests).

The objective of the planning process is to produce an approved document by the required date; this section is intended to provide the necessary guidance to meet that objective. The plan-production process which leads to an approved Timber Management Plan involves a number of steps:

- preplanning;
- objective establishment;
- strategy development;
- determination of management operations;
- plan production and submission; and
- plan review.

Since there will be constant feedback during the planning process which may require the re-evaluation of earlier decisions, the process seldom involves an orderly progression through these steps.

2.1 Preplanning

Preplanning is the preparatory stage in the production of a Timber Management Plan. It is initiated by the professional forester responsible for the plan production. The management unit forester is responsible in the case of Crown management units and the company forester is responsible in the case of FMA forests or company management units.

The forester notifies the district manager, who in turn gives notice to all other MNR resource management sectors which may be expected to provide input, that the planning process is being initiated. In the case of company plans, notification is given through the Crown representative or the unit forester.

The district manager, in consultation with the forester responsible for the plan, appoints a planning team to aid in plan production by providing direct input regarding other forest uses. For Crown management units, the MNR management unit forester acts as co-ordinator of the planning team. For company management units and FMAs, the planning team, co-ordinated by the MNR forester or Crown representative, provides assistance to the company forester.

It is the responsibility of the district manager to ensure that all programs are represented and that the concerns of all programs are adequately addressed during the planning process. To this end, the district manager may assign specific responsibilities to certain members of the planning team. These responsibilities may include the mandate of representing concerns raised by specific outside sources during the planning exercise.

The planning team first collects and reviews the existing background information and, when necessary, arranges for the collection of further information. This stage serves to familiarize the team with the forest or management unit and with the various factors which must be addressed in the plan. It is equally important at this time that the planning team be well acquainted with the intent and requirements of the Class Environmental Assessment as these elements must be incorporated as part of the requirements of the document.

The data which form part of the background information may have been collected some years in advance of the current planning exercise. The collection will have involved some preliminary projections regarding areas which may be allocated for operations. These projections are guided by previous plans and the historic progress of operations, and all resource management programs should be aware of the areas being considered. This advance investigation of the areas aids in the identification of specific concerns related to other resource values.

Once the planning team is familiar with the unit and has a comprehension of the task at hand, a planning schedule must be determined. The planning team (in consultation with the district manager) must then develop the terms of reference under which it will conduct the planning exercise. The terms of reference should outline the production schedule, duties of team members, possible issues or conflicts, communications plan, etc.

Figure 2.1 illustrates the schedule for the Timber Management Plan production and review process. This figure shows the periods of time which must be allowed for each step of the review process and for each of the public-consultation periods. The forester responsible for planning may, if circumstances dictate, start the entire planning process earlier to allow more time within each step. The team must establish a schedule which ensures that the draft plan is submitted in time for the requirements of the review phase. For example, should a start-up of operations on April 1 be desired, the draft plan must be submitted to the district manager no later than 180 days prior to April 1 (that is, on or about October 1). The planning schedule must be realistic and allow sufficient time to complete each phase; however, it must be clearly understood by the members of the planning team that the schedule must be adhered to. In order to ensure that the plan is the result of adequate consideration of all the important factors, input must be made according to the established schedule.

Once the planning schedule is established, an invitation to participate is issued by the district manager according to Section 3.1. A period of thirty days is allotted for the public to respond.

2.2 Objective Establishment

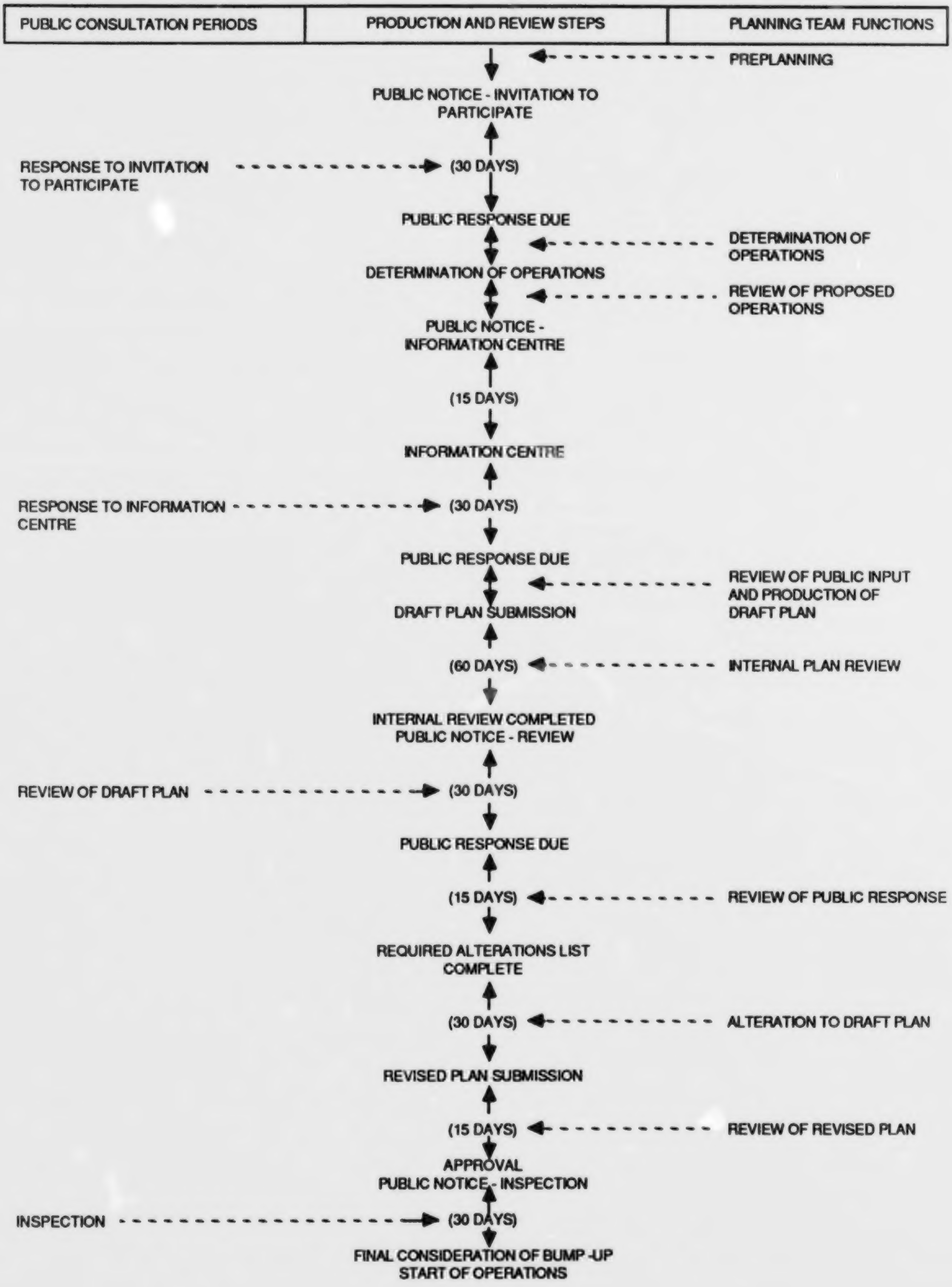
The objective of the forest management program on Crown land in Ontario is to provide for an optimum continuous contribution to the economy by forest-based industries consistent with sound environmental practices and to provide for other uses of the forest.

District Land Use Guidelines (DLUG) have indicated generally where the provincial program objectives will be achieved and have stated quantitative production targets. It is necessary to establish, for the management unit or forest, a volume target which represents its contribution towards achieving the DLUG target.

While the production objective can be quantitatively stated, the remainder of the forest management program objective can only be defined in qualitative terms. The objectives that all operations be carried out using sound environmental practices and that other uses of the forest resources be provided for are oriented to the process of meeting the production objective and generally define limits on the methods which may be employed to achieve that objective.

Certain other objectives have been stated or targets assigned in specific DLUGs. For example, some districts have been assigned an objective "to make the maximum contribution from forest products to the achievement of the provincial energy target".

FIGURE 2.1
TIMBER MANAGEMENT PLAN
PRODUCTION AND REVIEW SCHEDULE
(INCLUDING TIME ALLOWANCES REQUIRED)


PUBLIC CONSULTATION PERIODS
PRODUCTION AND REVIEW STEPS
PLANNING TEAM FUNCTIONS
PREPLANNING
PUBLIC NOTICE - INVITATION TO PARTICIPATE
RESPONSE TO INVITATION TO PARTICIPATE
(30 DAYS)
PUBLIC RESPONSE DUE
DETERMINATION OF OPERATIONS
DETERMINATION OF OPERATIONS
REVIEW OF PROPOSED OPERATIONS
PUBLIC NOTICE - INFORMATION CENTRE
(15 DAYS)
INFORMATION CENTRE
RESPONSE TO INFORMATION CENTRE
(30 DAYS)
PUBLIC RESPONSE DUE
REVIEW OF PUBLIC INPUT AND PRODUCTION OF DRAFT PLAN
DRAFT PLAN SUBMISSION
(60 DAYS)
INTERNAL PLAN REVIEW
INTERNAL REVIEW COMPLETED
PUBLIC NOTICE - REVIEW
REVIEW OF DRAFT PLAN
(30 DAYS)
PUBLIC RESPONSE DUE
(15 DAYS)
REVIEW OF PUBLIC RESPONSE
REQUIRED ALTERATIONS LIST COMPLETE
(30 DAYS)
ALTERATION TO DRAFT PLAN
REVISED PLAN SUBMISSION
(15 DAYS)
REVIEW OF REVISED PLAN
APPROVAL
PUBLIC NOTICE - INSPECTION
INSPECTION
(30 DAYS)
FINAL CONSIDERATION OF BUMP -UP
START OF OPERATIONS

Elsewhere an objective "to aid in the achievement of the job creation target" has been assigned.

A thorough review of all objectives and targets which have been established and assigned by higher levels of planning is necessary. This review will determine what objectives will govern operations and the extent of the contribution expected from the units or forests to the assigned district targets.

2.3 Strategy Development

Strategies must be developed to direct the manner in which all activities on the unit will be conducted in order to meet the objectives for the unit. Some strategies are very broad in nature and may have been established provincially or regionally. An example of a broad strategy is that the production target will be met "within the context of sustained-yield management and while providing a supply of wood sufficient to meet current industrial requirements". Other broad strategies which have been developed propose to meet the objectives by "managing the forest in a manner which upgrades the quality of the forest products therefrom" or by "promoting the full and complete utilization of the available forest resource".

Broad strategies, such as those stated above, require further refinement. More specific strategies must also be developed for the management unit or forest which will more precisely direct operations. For example, the broad strategy to promote full and complete utilization may be further defined by more specific strategies such as "access roads will be developed into areas of mature or overmature timber" or "an accelerated depletion rate will be applied so that overmature timber will be harvested with a minimum of further deterioration". A broad strategy of providing an optimum continuous supply of timber by "increasing the productivity of the unit" or forest may be accompanied by more specific strategies such as "applying intensive cultural practices on specifically defined sites", "conversion to more productive species", or "using only genetically improved planting stock".

The strategies which are developed will guide management and set the limits within which the following steps in the planning process will take place.

2.4 Determination of Management Objectives

Timber management planning requires the consideration of, and ultimate selection from among, a number of alternate methods for the provision of access, the harvest of the forest resource, and the subsequent renewal and maintenance of the forest resource. The alternative methods which may be used to attain the objectives and follow the strategies determined for the planning area must be identified, and the methods which best fit the strategies must be chosen.

Determining management operations is a complex and lengthy process and is therefore subdivided into a number of steps. This process involves a regular re-evaluation of earlier decisions rather than an orderly progression through the steps.

As management alternatives are developed, the planning team should attempt to identify any problems or issues which might arise should any alternative be implemented. There may also be opportunities afforded by some alternatives to integrate operations or achieve other efficiencies. These opportunities should be identified as well.

For a large part of the planning exercise the consideration of alternatives will go unrecorded. Only the final decision of which factor will be used or which course of action taken will be documented in the plan. However, for some steps in the planning process, as indicated in the appropriate sections below, the decision-making process must be documented. This documentation includes the status of the alternatives which were considered, the input received regarding the alternatives during public consultation, and the final decision which was made. In addition, a discussion of the potential impacts and the effect that public input had on the decision must be included in the supplementary documentation.

2.4.1 Identification of Constraints on Forest Operations

Factors that limit or exclude some of the potential operational methods are identified first in order to narrow the number of alternatives to be considered.

There is a wide variety of factors which may constrain operations. These include biological factors, such as the species mix or age-class distribution. Economic constraints will be imposed by such factors as stand operability and haul distance. The physical factors of soil type and topography will restrict forest operations in some areas. Environmental concerns related to risk of erosion or the degradation of water quality must be accommodated. Finally, the social considerations of aesthetic requirements and recreation use may render some operations undesirable.

2.4.2 Determination of Silvicultural Systems

The first management decision which must be made is which silvicultural systems are appropriate for each working group or forest unit. In the selection of silvicultural system(s), a number of factors must be taken into consideration, including the species involved, age/diameter distributions, product requirements, and desired composition of the future forest.

In addition to the basic decisions regarding silvicultural systems, the associated harvest, renewal, and maintenance treatments which comprise each system must be determined. The MNR's silvicultural guides will serve as the primary source data upon which this determination is based.

2.4.3 Determination of Rotation or Cutting Cycle

Once the potential silvicultural systems are determined, the appropriate rotation for even-aged management systems or cutting cycle for uneven-aged systems must be selected. This selection is normally based upon established provincial or regional standards, but these may be modified by local considerations.

2.4.4 Calculation of the Maximum Allowable Depletion

The maximum allowable depletion (MAD) is calculated for each combination of silvicultural system and rotation or cutting cycle according to the established procedures outlined in Appendix B of this manual. MAD is a mathematical calculation that is a function of area, age, and time. Area and age are recorded in the data base. The time factor, which is the period the forest is allowed to grow between successive harvests, has been chosen in the determination of rotation or cutting cycle. Other time-factor considerations must be estimated for clear cutting and strip-shelterwood cutting based on experience and records. These time considerations include the expected regeneration success and the estimated period between the harvest cut and the approval of the new stand as free-to-grow.

2.4.5 Determination of Depletion and Surplus

A forecast of the five-year requirements in terms of species and products is made using the past five-year cut as a base and considering current trends and changing markets.

Depletion rates are determined by attempting to balance forecast requirements of industry with the harvest component of MAD. Where requirements are lower than the harvest component of MAD, there will be a surplus. If the requirements are higher, there will be a deficit. Management strategies to alleviate surplus or deficit conditions must be developed.

MAD is calculated by area for each working group or forest unit, and surpluses and deficits may emerge by area in a working group or forest unit. There may also be volume surplus where the species or products required do not match what is available, even if the area and total volume are in balance with the requirements, for example where there is no market for the aspen component of a mixed stand, or where the main volume of a hardwood stand is in low-quality wood, and sawlogs and veneer are required.

2.4.6 Determination of Renewal and Maintenance Requirements

The land available for renewal and maintenance during the period of the plan consists of areas requiring treatment at the start of the plan period and new areas becoming available for renewal or requiring maintenance during the period of the plan.

The renewal and maintenance requirements are determined through surveys and from records and will include areas depleted in the past that still require regeneration to bring them to satisfactory stocking, areas depleted and regenerated in the past and requiring tending, and areas managed by selection or uniform-shelterwood cutting which are overdue for tending.

The new area becoming available for regeneration during the period of the plan is determined from the depletion rates which have been previously established. The new area which will need tending depends on the rate of renewal of stands which will require release and on the amount of stand improvement required as part of the selection and uniform-shelterwood cuts.

The determination of requirements will involve such things as:

- choosing between intensive and extensive management;
- establishing priorities in the choice of sites;
- establishing priorities for maintenance and renewal; and
- determining the relative return on expenditure for different alternatives.

2.4.7 Determination of Allocation

The process of allocation of areas for operations is broken down into three steps. First, the criteria which will guide the allocation of areas for operations must be established. Second, all areas which meet the criteria for allocation during the twenty-year period of the plan must be identified. Third, areas for operation during the five-year term of the plan are selected from those meeting the criteria for allocation.

2.4.7.1 Determination of Allocation Criteria

The criteria upon which areas will be allocated for operations must be developed. The feasible alternatives for allocation criteria will vary considerably, depending upon such factors as silvicultural system, depletion rate, etc.

Allocation for depletion is based mainly on age, with further considerations such as quality, proximity to access, or the need for salvage. Allocation for renewal is based on management strategies, the possibility of natural regeneration, site protection, etc. Allocation for maintenance is based on the values to be protected. The expected return on investment should be considered for all renewal and maintenance operations.

2.4.7.2 Identification of Areas Eligible for Allocation

Areas which meet the various criteria for allocation must be identified on a map. This very important step will outline the areas in which operations could potentially take place during the period of the management plan. The visual identification of areas is necessary to facilitate input from other users as to the impact operations could have. The identification of eligible areas will also guide the data collection which must take place to provide the detailed information required for subsequent planning exercises.

2.4.7.3 Preliminary Identification of Areas of Concern

Preliminary identification of areas of concern must be undertaken for areas eligible for allocation. Areas of concern, geographically defined, are those deemed to be of value to other users which could be affected by timber operations, including the provision of access, and which may require modifications to operations. In addition, at the preliminary stage, areas of concern may be identified in other parts of the management unit or forest through which new primary roads must pass to provide access to areas eligible for allocation.

The input from other MNR programs represented on the planning team and from other government ministries, interest groups, and the public will be a primary basis for the preliminary identification of the areas of concern. Most of the major areas of concern should previously have been identified in the DLUG; these guidelines will be a main source of background information.

As part of the preliminary identification of areas of concern, a description of the resource values which require protection in each area must be produced. This description will form part of the supplementary documentation package which must accompany the plan when submitted.

2.4.7.4 Allocation of Areas for Operations

From the areas which meet the criteria for allocation, specific areas must be selected on which operations will take place during the five-year term of the plan. The total area to be allocated should be consistent with the required levels of depletion, renewal, and maintenance as previously determined.

2.4.7.5 Identification of Specific Areas of Concern

Within those areas selected for allocation, specific areas of concern must be identified, primarily through the refinement of the preliminary identification of areas of concern conducted earlier. These specific areas of concern must be examined to determine if any special considerations are required in order to integrate management to minimize the impact of operations or enhance the management of other values. Specific areas of concern must also be identified in other parts of the management unit through which primary or secondary roads must be constructed during the five-year term of the plan to access the areas which are selected for allocation. The identification of specific areas of concern serves as a major contributor to the selection of the most acceptable or preferred alternative road locations to be determined later in the planning exercise.

As part of the identification of specific areas of concern, a description of the resource values which require protection in each area must be produced. This description will form part of the supplementary documentation package which must accompany the plan when submitted.

2.4.7.6 Determination of Operational Prescriptions for Allocated Areas

For normal operations, prescriptions for carrying out each of the component activities of forest management must be determined. The silvicultural system(s) to be employed in each working group or forest unit will have been previously established, and potential methods of carrying out each of the component activities of timber management for each silvicultural system will have been identified (see Section 2.4.2).

Detailed descriptions of the implementation procedures for specific operational prescriptions in normal operating areas are not set out in the Timber Management Plan. MNR silvicultural guides, manuals, and procedural directives provide comprehensive directions for the implementation of timber management operations.

It is particularly important that maximum flexibility be retained in the operational prescriptions. Optional methods of implementing the prescription must be available when operations are actually being done to accommodate such variable factors as stand and site conditions, weather, available equipment, and funding. In many situations it may not be possible to determine in advance whether a specific activity, such as tending after a renewal activity, will be needed at all and how many times it will be needed. In other situations, the actual method to be used, such as the determination of the method of site preparation after harvesting, may depend on an on-site inspection.

For specific areas of concern, detailed descriptions of the harvest, renewal, and maintenance operations must be determined during the preparation of the five-year plan of operations. The detailed descriptions are determined through the application of a comprehensive planning process to individual areas of concern or types of associated concern. This planning process requires the identification of an individual feature or value, such as a specific lake or particular segment of a river. Alternatively, associated types of features, or values, such as all lake-trout lakes or all designated canoe routes, may be identified.

The planning of operations in specific areas of concern initially requires a determination that timber management operations can be carried out while protecting the other identified resource values. If operations can be carried out in a normal manner, without significant impact on other values, the area will be allocated for normal operations.

If, however, normal operations cannot be conducted without a detrimental effect, it must be determined if operations can be modified so as to still contribute to the achievement of the forest management objective while not negatively impacting on another program's requirements for the same area. If such a modification is possible the area will be allocated for modified operations and prescriptions must be developed for these operations.

Finally, if operations cannot take place, even in a modified manner, while protecting other resource values, the area must be allocated as a reserve in which no timber management operations will be permitted.

It is recognized that for any individual area of concern the planning process will not normally involve a decision on only one of the options for allocation. Instead, the planning process will regularly involve the consideration and analysis of various combinations of normal and modified operations and reserves within a particular area of concern.

The MNR's guidelines for timber management operations in various types of areas of concern (e.g., fisheries habitat, tourism value, etc.) provide information on alternative modified practices which could be employed to protect particular resource values.

The details of the comprehensive evaluation and comparison of the potential environmental effects of the alternative practices must be documented as these will form part of the supplementary documentation required for operations in areas of concern.

2.4.8 Determination of Access

The process for planning of access construction varies depending on the class of road being planned. The planning for access is done on a specific-where-necessary basis in which the main planning emphasis will be on areas of concern.

The locations of broad corridors (up to one kilometre wide) must be determined for all primary roads required to access the areas which are eligible for allocation during the twenty-year period of the plan.

Alternative locations for the broad corridors must be identified. The alternative corridors are then analysed according to three criteria which measure the effectiveness of:

- access to areas eligible for harvest, renewal, and maintenance;
- accommodation of preliminary areas of concern; and
- cost of construction, maintenance, hauling, etc.

The analysis of the alternative corridors will lead to the selection of a preferred or most acceptable location.

Once areas have been selected for operations during the five-year term of the plan more detailed planning is carried out.

Specific areas of concern are identified through refinement of those identified at the preliminary stage. These specific areas of concern may be within the area allocated for operations during the five-year term of the plan or they may be in other parts of the management unit or forest through which new primary- or secondary-access roads must be constructed during the five-year term to reach the allocated areas.

Within specific areas of concern alternative locations for new primary and secondary roads must be identified with a maximum one-hundred-metre width. A comprehensive evaluation and comparison of the environmental effects of each alternative location within each specific area of concern must be undertaken. The results of the analysis provides the basis for the selection of the preferred or most acceptable alternative. The details of this process will form part of the supplementary documentation required for primary- and secondary-access-road locations.

Within areas allocated for normal operations during the five-year term of the plan, the primary-road corridors are refined to a five-hundred-metre width. The location of five-hundred-metre corridors for new secondary roads must also be determined for the five-year term.

For each primary- and secondary-access road, a use-management strategy is also developed. The use-management strategy will be based principally on consideration of the other identified resource values which require protection within specific areas of concern which are traversed by, and/or are in the vicinity of, the particular road. Various options for managing the use of access roads must be considered (e.g., road closure under the authority of the Public Lands Act, use restrictions to specific classes of vehicles, non-maintenance or abandonment after the intended use of the road has been fulfilled, etc.).

For new tertiary roads, the planning exercise will concentrate on the identification of areas where these roads will not be permitted. In addition, areas may be identified where special practices (e.g., winter roads only) may be required. The development of use-control strategies may also be warranted in some situations.

Over and above the normal operations employed in the construction of forest-access roads, there may be measures which could be used to prevent, lessen, or mitigate the potential adverse environmental effects of the alternatives. Potential preventative and mitigative measures which reasonably can be employed must be identified for each alternative. Such commitments could be the key determining factors in the ultimate selection of the most acceptable or preferred alternative.

The process of determining the location of access roads and the decisions concerning location will form part of the supplementary documentation which must accompany the management plan when it is submitted for approval.

2.5 Wood-Disposition Program

The program of wood disposition from the areas allocated for harvest must be defined. For company management units and FMAs the wood will be available to the company to meet its requirements. Any surplus may be disposed of by the Minister. On Crown management units the type of licences (e.g., order in council, tendered sale, district cutting) which will be used to make timber available for harvest must be determined. The decision regarding the individual or company to whom the licence will be issued is made by the Minister under authority of the Crown Timber Act. This decision will primarily be based upon previous commitments and traditional supply arrangements made with the established forest-based industry.

2.6 Determination of Support Requirements

The support requirements necessary to carry out the planned operations must be determined. They can be broken down into two categories: silvicultural support (e.g., tree improvement, seed collection) and physical improvements (e.g., camps, airstrips, etc.). The requirements will vary significantly depending upon the combinations of location and prescription which are considered.

2.7 Plan Production and Submission

A review of the operations proposed for normal operating areas or the alternatives considered in areas of concern (including the preferred alternative) is carried out by the planning team prior to the production of a draft plan. Since the team has been providing input during the process, major conflicts or concerns are not likely to be identified at this time. The team review may, however, highlight areas which should be addressed in the Information Centre which follows this review.

The Information Centre is a one-day opportunity for all interested parties to view presentations or displays which outline the proposed operations or alternatives prior to the production of a draft plan. The Information Centre is conducted as outlined in Section 3.2. A period of thirty days is allotted after the Information Centre for the public to present submissions regarding concerns with the preliminary proposals for the draft Timber Management Plan.

The draft plan, and the supplementary documentation describing the submissions received from the public and how they were considered in the preparation of the draft plan, will then be produced. Two copies of the plan, each with original signatures, must be submitted to the district manager to initiate the review process.

The deadline for submission of the draft Timber Management Plan has been previously established; in the case of the Forest Management Agreements (FMAs) it forms part of the agreement.

2.8 Plan Review

Upon the submission of the draft Timber Management Plan, an internal review of the draft plan and the supplementary documentation will be undertaken by the MNR district, region, and Forest Resources Group, Main Office. This review could be favourable, recommending approval of the draft plan as submitted, or unfavourable, culminating in a preliminary list of required alterations and the reasons for them. The Director, Timber Sales Branch, Forest Resources Group, will forward this list to the district manager and, in the case of company management units and FMAs, to the company involved.

Following the internal review, a public review of the draft plan is conducted as outlined in Section 3.3.

After the thirty-day public-review period, the MNR will consider the public submissions. Where no significant concerns are expressed or public submissions cannot be accommodated, and MNR's internal review recommends approval of the draft plan as submitted, no alterations to the draft plan will be required. If, however, significant concerns are expressed or public submissions can be incorporated, the MNR will include those items along with its preliminary list of required alterations, if any, in a final list of required alterations to the draft plan.

The final list of required alterations will be jointly produced by the MNR's district, region, and Forest Resources Group, Main Office, and forwarded by the Director, Timber Sales Branch, Forest Resources Group, Main Office, to the district manager and, in the case of company management units and FMAs, to the company involved. Revisions are then made to Timber Management Plan which is then submitted for approval along with the supplementary documentation. The MNR will undertake an immediate internal review by the district, region, and Forest Resources Group to ensure that the required alterations have been made.

If the draft plan, as submitted, requires no alterations or if the required alterations have been satisfactorily incorporated into a revised plan, it will then be approved by the Director, Timber Sales Branch, Forest Resources Group, and the regional director.

Upon approval of the Timber Management Plan, the appropriate MNR regional office, as well as the Environmental Assessment Branch of the Ministry of the Environment and the MOE regional office will be notified by the Director, Timber Sales Branch, and a summary of the plan (which was included in the appendices) will be filed in the public record of the Ministry of the Environment. The summary will include the following information:

- the name of the forest management unit for which the plan was prepared;
- a map of the forest management unit covered by the plan;

- the duration of the plan;
- the dates of the public-consultation periods;
- the nature of the comments received from other government ministries or agencies, interest groups, and individual members of the public during public consultation in preparation of the plan; and
- the nature of the MNR's response to those comments as reflected in the approved plan.

The regional director will notify the appropriate district office at which time the district manager will issue a public notice, as outlined in Section 3.4, advising all interested participants that the approved plan is available for inspection at the district office.

Following the public notice, a period of thirty days is allotted for the final consideration of the "bump-up" of the whole plan or any part of the plan to an individual environmental assessment. After the period allotted for final consideration of "bump-up", operations may proceed.

2.9 Plan Renewal and Amendment

A new twenty-year Timber Management Plan is prepared at the end of each five-year term. This revision system permits the necessary adjustments in operations and forecasts to allow for changes in the forest base, markets, and other conditions.

An unscheduled renewal of the plan may also be required if the plan is rendered obsolete during the five-year term. Any change in circumstances or any catastrophe which could render the objectives unattainable or the strategies inappropriate, for example where large fires or insect outbreaks require major changes in the location or types of operations prescribed, would require an unscheduled renewal. If an unscheduled renewal of a plan is required it must be undertaken in the same manner as a scheduled renewal and must include the requirements for review and public consultation.

An amendment to a management plan may be made if changes are required that do not affect the intent of the plan. An explanation of the need for an amendment and the proposed change must be documented and submitted to the district manager.

Amendments may be major or minor in nature. A switch from the original prescription to another of the approved optional treatments would, in most cases, be considered a minor amendment. A major amendment, however, generally would be one which resulted in significant reductions in woodflow to the user mills or in significant changes in the location or type of operations (including access construction) in previously identified areas of concern or, finally, in operations in unallocated areas.

If the requested amendment is minor, the district manager may approve the amendment and advise the regional director and the Director, Timber Sales Branch, Forest Resources Group, Main Office.

If, however, the requested amendment is major, the district manager must, together with the regional director, establish the requirements for internal review and public consultation concerning the requested amendment.

The requirements for internal review and public consultation will vary depending upon the nature of the amendment requested. The minimum opportunities for public consultation which must be provided for a major amendment include those offered at an Information Centre and an inspection period for the approved amendment. These will be conducted in a similar manner, with the same public-notice requirements, as the corresponding public-consultation opportunities provided in the production of a new plan.

The Information Centre must present the requested amendment, the possible impacts of the amendment, alternatives which have been considered, and the justification for the selection of the requested amendment as that preferred of the options presented. Following the Information Centre, a period of thirty days is allotted for the public to present submissions regarding concerns related to the requested amendment.

Following the consideration of public submissions the district manager will forward his recommendations to the regional director. The regional director will then, in consultation with the Director, Timber Sales Branch, Forest Resources Group, Main Office, either approve the amendment as requested, approve the amendment with such alterations or conditions as he or she deems necessary, or indicate that he or she will not approve the requested amendment.

Should the amendment be approved, a public notice that the approved amendment is available for inspection is issued. Following the public notice, a period of thirty days is allotted for final consideration of "bump-up" of the amendment to an individual environmental assessment. After the period allotted for final consideration of "bump-up", operations may proceed according to the amendment.

Following approval of the amendment, a copy of the amendment as approved will be forwarded to the district, to the company if the amendment is to a company plan, and to the Environmental Assessment Branch of the Ministry of the Environment and the MOE regional office; two copies will be sent to the Director, Timber Sales Branch, Forest Resources Group, Main Office. The approved amendment will then be appended to the copies of the plan at each location.

2.10 Monitoring

The monitoring of operations on an on-going basis is an integral part of the planning process. The analysis of operations to determine if the units and quality of accomplishments are in line with required levels is necessary to evaluate the effectiveness of the program.

The quantitative measure of accomplishments is reported annually in the annual reports which are in turn accumulated and compared to the planned activities in the report on past operations.

The qualitative measure of accomplishments is, however, reported in a variety of ways which are not documented in the plan. Program audits look at the qualitative aspects of program delivery. In addition, activities such as cut inspections and work-permit inspections evaluate compliance with conditions placed on operation and, therefore, the quality of operations. Contract administration also addresses the topic of the quality of program delivery. Standards are set as part of the contract, and payment is conditional upon completion of the contracted work to those established standards.

The Crown Timber Act requires that at the end of each term of five years of a Forest Management Agreement a report be laid before the legislature "in respect of the relationship between harvest and growth, including regeneration, of timber during said term on the area subject to agreement". The Forest Management Agreement requires the Minister to determine, for the same period of time, whether or not the obligations of the company, under the management documents, have been satisfactorily performed.

The evaluation of results based upon the regular monitoring of operations is an important component of the planning process, often providing the justification for continuation of an established procedure or for change to a new method or practice.

3.0 PUBLIC CONSULTATION

Public consultation is an important component of the planning process for activities on Crown land. The passage of the Environmental Assessment Act, 1975, and its binding application to the Crown has reinforced the requirement that the planning process provide opportunities for public consultation. The planning process for timber management on Crown lands must provide the opportunity for the participation of individuals, interest groups, and relevant government ministries or agencies.

The planning process for a Timber Management Plan provides formal opportunities for public consultation by:

- issuing an invitation at the start of the planning process to relevant government ministries or agencies, interest groups, and interested individuals to participate in its preparation;
- conducting a one-day Information Centre presenting, for review, the proposed operations in normal operating areas and the alternatives (including the preferred alternative) in areas of concern prior to the production of a draft plan;
- providing a thirty-day period for public review of the draft plan; and
- issuing a public notice upon approval of the plan advising all interested participants that the approved plan is available for inspection.

The schedule for the periods allowed for public consultation is illustrated in Figure 2.1.

For Timber Management Plans produced for Crown management units, the MNR will be responsible for all aspects of public consultation. For company-produced plans on company management units or FMAs, the MNR will assume the local role to ensure that all formal opportunities for public consultation are provided. This role will include the issuance of public notices and provision of facilities for the Information Centre or plan review. The company, in turn, will be responsible for ensuring that all comments and submissions from external participants are considered in the preparation of the plan and that the documentation of public consultation is included in the supplementary documentation as required.

3.1 Invitation to Participate

As soon as a schedule for the preparation of the Timber Management Plan has been determined, the district manager will issue a public notice announcing the commencement of the preparation of the Timber Management Plan for the company management unit or FMA forest. Relevant government ministries and agencies, interest groups, and individuals with an interest in timber management planning for the area are invited to participate in its preparation.

This public notice will be in the form of direct written invitations to local and regional offices of relevant government ministries and agencies, interest groups and individuals with a known interest in timber management planning for the forest management unit, and paid public advertisements in the local media advising the public of the opportunity to become involved. Verbal notice may also be appropriate in specific circumstances.

The public notice will include a map of the management forest, the planning schedule, and an outline of the subject matter to be covered by the plan. It will invite input regarding concerns which the government ministries and agencies, interest groups, and individuals feel must be addressed in the plan.

A period of thirty days is allotted for the public to respond to the invitation to participate.

3.2 Information Centre

Upon the completion of an internal review, the district manager will issue a public notice inviting all interested participants to an Information Centre to review and comment on alternatives, developments, and preliminary proposals in the timber management planning exercise to date. The public notice will be in the form of direct written invitations to all who received written notices in the initial invitation to participate and paid advertisements in the local media advising the public of the opportunity to review progress to date. Verbal notice may also be appropriate in specific circumstances.

The Information Centre is a one-day opportunity for all interested parties to view presentations or displays which outline the proposed operations in normal operating areas or alternatives in areas of concern (including the preferred alternative) prior to the production of a draft plan. It provides an opportunity for public comments on developments in the timber management planning exercise before key decisions are made. The principal information which must be presented at the Information Centre is:

- the proposed forestry operations in areas which meet the criteria for allocation or are proposed for allocation;

- the alternative locations of the broad corridors for each primary forest-access road which is required for the twenty-year term of the Timber Management Plan and the preferred or most acceptable alternative;
- the more precise alternative locations for each primary and secondary forest-access road which is required for the first five-year term of the plan and the preferred or most acceptable alternative;
- the identified areas of concern; and
- the alternative prescriptions for operations within areas of concern and the preferred or most acceptable alternative.

All members of the MNR planning team, the district manager, and, for company-prepared plans, company personnel will be present at the Information Centre to explain developments in the timber management planning exercise to date and to respond to any inquiries.

A period of thirty days after the date of the Information Centre is allotted for the public to present submissions regarding concerns with the preliminary proposals for the draft Timber Management Plan. During this time, the displays and information materials will continue to be available for public review at the MNR district office.

3.3 Review of Draft Plan

After the MNR internal review of the draft plan and supplementary documentation has been completed, the district manager will issue a public notice inviting all interested participants to review the draft Timber Management Plan, the supplementary documentation, and the MNR's preliminary list of required alterations. This review will take place prior to approval of the draft plan.

This public notice will be in the form of direct written invitations to all respondents to the initial invitation to participate and visitors to the review Information Centre, and paid advertisements in the local media advising the public of the opportunity to review the draft Timber Management Plan, the supplementary documentation, and the MNR's preliminary list of required alterations. Verbal notice may also be appropriate in specific circumstances.

The review will enable the public:

- to note how their earlier submissions and comments regarding concerns with timber management proposals have been considered in the preparation of the draft plan;
- to comment on the key decisions which have been made; and
- to study the MNR's preliminary list of required alterations.

A period of thirty days after the date of the public notice is allotted for the public to review the draft Timber Management Plan, with the supplementary documentation and required alterations list, at the MNR district office, and to present submissions regarding alterations.

3.4 Inspection of Approved Plan

Upon approval of the Timber Management Plan the district manager will issue a public notice advising all participants that the approved plan is available for inspection. The Timber Management Plan must be available for inspection at the MNR district office. The public notice will be in the form of direct written notices to all previously identified participants and all parties and individuals potentially affected by the timber management operations which will be carried out during the term of the approved plan. Paid advertisements in the local media advising the public of the opportunity for inspection of the approved plan will also be issued. Verbal notice may also be appropriate in specific circumstances.

The public notice must also clearly indicate that this represents the final opportunity to request a "bump-up" of the whole plan, or any part of the plan, to an individual environmental-assessment status. Following the public notice, a period of thirty days is allotted for final consideration of such a request.

The approved Timber Management Plan will remain available for public inspection at the MNR district office at any time during its five-year term.

4.0 TIMBER MANAGEMENT PLAN REQUIREMENTS

This section outlines the minimum requirements for an acceptable Timber Management Plan for Crown forests in Ontario.

Since this manual was designed to be applicable on a province-wide level, it may not include as requirements those items which may be necessary for a specific locality. Certain regions or districts may add specific requirements for Timber Management Plans prepared within their administrative areas. However, any additional requirements must be negotiated where the responsibility for plan production rests with a company.

All management plans and subsequent renewals must be prepared by, or under the personal supervision of, a professional forester registered under the Ontario Professional Foresters Association Act, 1957, and according to the requirements outlined in this manual.

A good report-writing format, as outlined in a current standard manual, should be followed in preparing the plan.

4.1 Title, Certification, and Approval Page

The plan must begin with a title, certification, and approval page in the format shown in Figure 4.1. This page serves to identify the plan and to indicate its approval. It must have the certification, seal, and signature of the professional forester responsible for preparing the plan. A senior company official must also sign for company management units and FMAs. The district manager responsible for the implementation of the plan signs where indicated to certify that he or she is satisfied that the plan is consistent with other resource management plans, land-use guidelines, and policies for the area, and to indicate it has approval, subject to any proposed changes that the district manager may submit. At the bottom of the page a space is provided for the joint approval of the appropriate regional director and the Director, Timber Sales Branch, Forest Resources Group, Ministry of Natural Resources.

FIGURE 4.1
TIMBER MANAGEMENT PLAN
TITLE, CERTIFICATION, AND APPROVAL PAGE

TIMBER MANAGEMENT PLAN
for the

[NAME OF MANAGEMENT UNIT OR FOREST]

[Administrative District and Region
Company Name, Licence, or FMA Number (where applicable)]

for the
twenty-year period

from to
Expiry Date March 31,

I hereby certify that this plan has been prepared under my personal supervision and that all field work and calculations have been carried out to the best of my skill and judgement in accordance with the Timber Management Planning Manual for Crown Land in Ontario.

	[Forester's name]	(date)
[R.P.F. seal]		
Submitted by: (where applicable)	[Senior Company Official]	(date)

I have read this Timber Management Plan and found it satisfactory and consistent with other resource management plans, land use guidelines, and/or policies for the area.

I recommend that the plan be approved for implementation.

	(District Manager)	(date)
Approved by:	(Regional Director)	(date)
	(Director, Timber Sales Branch)	(date)

[NOTE: Names must be signed as well as typed and, where appropriate, titles should be given.]

Original signatures must appear on the two copies of the plan submitted for approval. If a company wishes original signatures on its own copy of the approved plan, it may submit a third copy of the plan or a third copy of the title, certification, and approval page only, which will be returned after approval.

The MNR will keep one copy of the approved plan with the original signatures on the title page in the Management Planning Section, Timber Sales Branch, Forest Resources Group, Main Office, and the second copy in the controlling district. Two additional copies of the approved plan must be provided by the district for the regional office and main office. The full set of maps listed in the appendices are only required to be included with the district- and regional-office copies of the plan.

4.2 Preface

Since a management plan is a public document and, as such, must be self-explanatory, a preface should be included which outlines the purpose of the plan and where it fits into resource planning on Crown land.

The material outlined in the following paragraphs could be used for, or as a basis for, a preface:

> Timber management on Crown land is the responsibility of the Minister of Natural Resources. The Crown forest of Ontario is subdivided into management units and forests for purposes of timber management. Planning is done through the use of Timber Management Plans for twenty-year periods to be renewed each five years. Each plan must be prepared under the direction of a professional forester registered under the Ontario Professional Foresters Association Act, 1957.
>
> The objective of forest management programs on Crown land in Ontario is to provide for an optimum continuous contribution to the economy by forest-based industries consistent with sound environmental practices and to provide for other uses of the forest. Since forested land provides a range of values and opportunities to the public, its management must be planned in a manner that recognizes the requirements of other uses. This aspect of planning is accomplished by the district manager's setting up a team of resource managers to provide input and review during the planning process to ensure that all resources are considered.
>
> The Timber Management Plan establishes the long-term objectives and strategies for timber management and provides the necessary continuity. The five-year renewal term provides the means for reporting progress in management and for reviewing and improving the twenty-year forecasts. The Timber Management Plan also outlines the forest operations necessary to meet the

objectives while at the same time minimizing adverse environmental impacts. The forest operations will be planned for a five-year term only and will be redone at each five-year renewal of the plan.

Finally, Annual Work Schedules will be produced to outline the actual implementation of forest operations on a yearly basis. These schedules will provide the link between the work proposed in the Timber Management Plan for the five-year terms and the financial resources allocate through the government's annual budgeting process.

4.3 Table of Contents

A table of contents and a list of tables and maps are required following the preface.

4.4 Introduction

An introduction, including the name of the management unit or forest, the company name and licence or FMA number where applicable, the administrative district and region, and the planning period should follow the itemized contents.

A key map, with an appropriate legend, is required at a scale which will fit on the standard text page. The map must show the appropriate districts and regions, their names and headquarters, and the management unit or forest. The location of the company office should be included, where applicable.

4.5 Administration and Physical Description

A management map at a scale of 1:250 000 is required to show the boundary of the unit or forest, mills which receive wood from the unit or forest (where practical), primary access, land-use areas from District Land Use Guidelines, and private land. Other information may be included, and the map should be briefly explained.

The date that the present area boundaries were established should be indicated, and reference must be made to any previous management plans and major licences. Where a management unit or FMA boundary overlaps district or regional boundaries, the controlling district and region should be identified.

Any subdivision of the area into operating units, working circles, or compartments for timber management or administrative purposes should be described.

4.6 Report of Past Forest Operations

The purpose of this section is to report progress in meeting management objectives and to compare planned and actual achievements. This analysis of past operations will help identify problem areas, improve future planning, and provide support for changes in the level of proposed operations.

The report on timber management operations for the previous five-year term of the plan follows the format of tables 4.1 to 4.7. Any significant differences between the work planned for the previous term and the work actually performed should be explained. An analysis of the impact of such differences on the achievement of the objectives and targets or the implementation of planned strategies must be provided.

The planning exercise will normally take place during the final year of the term of the previous plan. Therefore, the actual figures necessary to complete the required tables will not be available. The actual figures for the first three years will be available in the annual reports which have been submitted. The figures for the fourth year, although it will have been completed, may only be estimates since the final cutover report may not be available until after the plan is submitted. Finally, the fifth-year figures will be forecasted since operations will still be in progress at the time of plan submission. When the fifth year is completed and the actual information is available, the corrected tables will be added to the plan. However, barring major errors in the estimates or forecasts, no revision of plan will be undertaken based upon the actual figures.

Copies of the tables for the three earlier five-year terms, with corrected data in place of the estimates, should be included as an appendix. This information will permit observation of the longer-term trends and their effect on the plan objectives.

The tables which must be included in this section of a Timber Management Plan are:

Table 4.1 REPORT OF DEPLETION BY AREA

In this table the actual depletions are shown according to the type of depletion for each working group or forest unit. Where forecasts of specific types of depletion (e.g., harvest) were made in Table 4.15 of the previous plan the actual depletion is compared to the planned depletion.

Table 4.2	REPORT OF HARVEST-AREA DEPLETION BY LICENSEE This table compares the actual harvest depletion by working group to the planned harvest depletion by working group for each licensee or licence type. The planned units are those which appear in Table 4.16 of the previous plan.
Table 4.3.1	REPORT OF WOOD UTILIZATION The utilization of wood from the management unit/forest is reported for each licence by species. For different licence types, such as DCLs or tendered sale, the information may be grouped by type. The actual volume utilized must be compared to the planned utilization from Table 4.18.1 of the previous plan.
Table 4.3.2	REPORT OF WOOD UTILIZATION FOR PRIME LICENSEE OR AGREEMENT-HOLDER MILL(S) Table 4.3.2 is required in plans prepared by a company for a company management unit or FMA forest. The wood received by each prime licensee or agreement-holder mill is recorded, and the actual total volume received is compared to the planned total volume from Table 4.18.2 of the previous plan.
Table 4.4	REPORT OF RENEWAL AND MAINTENANCE OPERATIONS The renewal and maintenance operations which have been carried out on recent cutover, NSR land, or in existing stands is recorded in this table. The actual areas treated are compared to the planned areas from Table 4.19 of the previous plan.
Table 4.5	REPORT OF TREE IMPROVEMENT SUPPORT The accomplishments in tree improvement support are recorded and compared to the planned units from Table 4.20 of the previous plan.
Table 4.6	REPORT OF ACCESS ROAD CONSTRUCTION AND MAINTENANCE The actual kilometres of primary and secondary road constructed and the actual kilometres of road maintained are recorded separately for each road. The actual kilometres constructed and maintained are compared to the planned kilometres from Table 4.21 of the previous plan.

Table 4.7 REPORT OF FTG ASSESSMENT AND SUCCESS

The actual areas of free-to-grow assessment of treated and untreated land in each working group/forest unit is compared to the planned area of assessment from Table 4.22 of the previous plan. In addition, a summary of the determined age class is included for the approved area in each working group/forest unit.

☐ PRELIMINARY
☐ FINAL

TABLE 4.1

REPORT OF DEPLETION BY AREA

for the five-year term
from __________ to __________

______________________________ MU/FOREST

WG/FU	AGE CLASS	AREA (Ha)																	Un-treatable Area (Ha)
		ACTUAL DEPLETIONS														MAD	DIFF. MAD - TOTAL (Actual)	BY-PASS	
		HARVEST						RESERVE		NATURAL				TOTAL					
		Normal		Modified		Subtotal													
		Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Burn	Insect/ Disease	Other	Subtotal	Plan	Actual				
TOTAL																			

INSTRUCTIONS

TABLE 4.1

REPORT OF DEPLETION BY AREA

Complete and include as part of the performance report for past operations for inclusion in the Timber Management Plan for the next period. Indicate the status of the data being reported:

PRELIMINARY - check this box if it is necessary to include in the table, at time of plan submission, some data which are estimates of the actual.

FINAL - check this box if the table contains five years of actual data in the ACTUAL columns.

Replace this PRELIMINARY table (in all plan copies) with the FINAL table containing the ACTUAL depletion data for the five-year term by NOVEMBER 15th of the year in which the plan terminated.

1. ACTUAL DEPLETION: Enter PLAN and ACTUAL area by WG/FU and age class for each of the depletion categories HARVEST, RESERVE, and NATURAL (complete subtotals and total as indicated).

2. WG/FU: Enter Working Group/Forest Unit.

3. AGE CLASS: For even-age management, enter five-year age classes for which there is depletion. No age is required for selection system.

4. HARVEST: Normal - Enter area depleted by harvest operations carried out according to the prescriptions for normal forest operations.

   Modified - Enter area depleted by harvest operations carried out according to the prescriptions for modifed operations.

5. RESERVE: Enter area for which harvest operations were not permitted in allocated stands during the five-year term according to the prescriptions for modified operations.

6. NATURAL: Enter area of unplanned depletion of a natural origin.

   BURN - area depleted due to wildfire.

   INSECT/DISEASE - area of forest depleted due to insect infestation or disease where a salvage operation will not occur.

   OTHER - area depleted due to any other natural cause such as: wind, hail, flooding, and natural degredation due to overmaturity (where the stand can be reclassified to B&S/NSR).

   Enter area depletion only once in a cutting cycle.

   E.g., If a stand is damaged by a natural cause and a salvage operation follows to remove the merchantable timber and the stand area depleted has been reported for the year in which the natural depletion occured, do not record again when the salvage occurs. Complete a separate Table 4.1 to record any salvage harvest area when it occurs and include with the report.

7. PLAN/ACTUAL:

   PLAN - Enter the area by age class and WG/FU, for the five-year term, for those depletion categories which have been forecasted. Enter directly from Table 4.15 (Forecast of Depletion by Area).

   ACTUAL - Enter the accumulated area by age class and WG/FU, from the five annual reports (Table 6.1) for the five-year term, for each depletion category.

   NOTE: This table will be completed during the fifth year of the current term as part of the Report on Past Operations during the preparation of the plan for the next five-year term. At that time, actual depletion area will not be available for the fifth year and may not be available for the fourth year. In lieu of ACTUAL depletion area, substitute the actual area depleted for the first three years, an estimate of the area depleted for the fourth year, and a forecast of the area to be depleted (Table 5.1) for the fifth year. Check the PRELIMINARY box at the top left-hand corner of the table.

8. MAD: Maximum Allowable Depletion. Enter area by five-year age classes by WG/FU from Table 4.14 (Maximum Allowable Depletion Summary), CURRENT column.

9. DIFFERENCE: Enter the difference between MAD area and TOTAL ACTUAL area depleted for each age class by WG/FU and indicate whether the result is a negative or positive number.

10. BY-PASS: Enter the area by age class and WG/FU for those stands and/or parts of ALLOCATED stands larger than 8 hectares which have not been depleted during the term and which, in the manager's judgement, cannot reasonably be expected to form part of a subsequent harvest cut. These stands or parts of stands are within or immediately adjacent to the area of harvest operations.

11. When entering WG/FU data, list MAD Land Base (PFR & Regular) first, enter a subtotal row, and then list any other depletion for that WG/FU (B&S, NSR, and PF categories). Total by WG/FU and for the MU/Forest.

12. UNTREATABLE: Enter , by WG/FU, the depletion area that has been classified and agreed to during the five-year plan. Enter the sum of the five annual reports (Table 6.1) for the term.

13. Enter all area figures in hectares. Conversion: 1 hectare = 2.471 acres
    1 acre = 0.405 hectares

TABLE 4.2

☐ PRELIMINARY
☐ FINAL

REPORT OF HARVEST AREA DEPLETION BY LICENSEE

for the five-year term
from__________ to __________

______________________________ MU/FOREST

CONSUMER(S) (By Licensee)	HARVEST AREA (Ha)						
	WG/FU					TOTAL	
	Plan	Actual	Plan	Actual		Plan	Actual
TOTAL HARVEST							

INSTRUCTIONS

TABLE 4.2

REPORT OF HARVEST AREA DEPLETION BY LICENSEE

Complete and include as part of the performance report for past operations for inclusion in the Timber Management Plan for the next period. Indicate the status of the data being reported:

PRELIMINARY - check this box if it is necessary to include in the table, at time of plan submission, some data which are estimates of the actual.

FINAL - check this box if the table contains five years of data in the ACTUAL columns.

Replace this PRELIMINARY table (in all plan copies) with the FINAL table containing the ACTUAL depletion data for the five-year term no later than twelve months following the plan submission.

1. CONSUMER(s): List all licensees, including third party and Order in Council and District Cutting Licences, that harvested timber from the MU/Forest during the term. Licensees for some methods of disposal may be grouped (e.g., DCLs and Tender Sales).
   Types of licensees:
   O.C. - Order in Council
   DCL - District Cutting Licence
   Sale By Tender
   Salvage
   FMA - Forest Management Agreement
   TSA - Timber Sales Agreement

2. HARVEST: Enter area by WG for each licensee under each of the two columns, PLAN and ACTUAL.

3. PLAN/ACTUAL:
   PLAN - Enter the area (hectares) by WG/FU that was planned (forecast) for the five-year term for each of the licensees. Enter directly from Table 4.16 (Forecast Disposition of Maximum Allowable Depletion Area).
   ACTUAL - Enter the area (hectares) by WG/FU for each licensee that was harvested during the term.

   NOTE: This table will be completed during the fifth year of the current term during the preparation of the plan for the next five-year term. At that time, actual data may not be available for the fifth year and may not be available for the fourth year. In lieu of the actual depletion areas, substitute the actual area depleted for the first three years, an estimate of the area depleted for the fourth year, and a forecast of the area to be depleted (Table 5.2) for the fifth year. Check the PRELIMINARY box at the top left-hand corner of the table.

4. TOTAL: Enter total planned and actual for each licensee.

5. TOTAL HARVEST: Enter total for all columns to indicate the total harvest for the MU/Forest during the five-year term for all licensees in comparison with the forecast.

6. Enter area in hectares. Conversion: 1 hectare = 2.471 acres
   1 acre = 0.405 hectares

TABLE 4.3.1

☐ PRELIMINARY
☐ FINAL

REPORT OF WOOD UTILIZATION BY LICENSEE

for the five-year term
from __________ to __________

______________________________ MU/FOREST

CONSUMER(S) (By Licensee)		VOLUME (NMm^3) BY SPECIES					
		CONIFER		HARDWOOD		TOTAL	
			Subtotal		Subtotal	ACTUAL	PLAN
TOTAL	ACTUAL						▨
	PLAN					▨	

INSTRUCTIONS

TABLE 4.3.1

REPORT OF WOOD UTILIZATION BY LICENSEE

This table records the harvest performance by volume for the five-year term compared with the forecast given in Table 4.18.1 of the plan. All volume harvested from the MU/Forest during the term is recorded here.

Complete and include as part of the performance report for past operations. Indicate the status of the data being reported:

PRELIMINARY - check this box if it is necessary to include in the table, at time of plan submission, some data which are estimates of the actual.

FINAL - check this box if the table contains five years of data in the ACTUAL columns.

Replace this PRELIMINARY table (in all plan copies) with the FINAL table containing the ACTUAL depletion data for the five-year term no later than twelve months following the plan submission.

1. CONSUMER(S): List all licensees, including third party and Order in Council and District Cutting Licences, that harvested timber from the MU/Forest during the term. Licensees for some methods of disposal may be grouped (e.g., DCLs and Tender Sales).

   Types of licensees:
   - O.C. - Order in Council
   - DCL - District Cutting Licence
   - Sale By Tender
   - Salvage
   - FMA - Forest Management Agreement
   - TSA - Timber Sale Agreement

   Normally, the list of licensees should be the same as those in Table 4.18.1 .

2. VOLUME: Source--> Scaling Returns

   Enter volume by species for each licensee or group of licensees in net merchantable cubic metres (NMm^3). Subtotal by conifer and hardwood.

   TOTAL: Actual - Enter column totals for species.
   Plan - Enter planned utilization volume by species from Table 4.18.1(TOTAL PLANNED VOLUME).

3. TOTAL VOLUME: ACTUAL - Enter row totals (conifer and hardwood) by licensee.
   PLAN - Enter total volume (conifer and hardwood) from Table 4.18.1 (TOTAL VOLUME) by licensee.

4. Enter volume in cubic metres. Conversion:
   1 cunit = 2.8317 cubic metres (m^3)
   1 cord = 2.4069 cubic metres (m^3)
   1 cubic metre (m^3) = 35.3147 cubic feet

TABLE 4.3.2

REPORT OF WOOD UTILIZATION FOR PRIME LICENSEE OR AGREEMENT HOLDER MILL(S)

☐ PRELIMINARY
☐ FINAL

for the five-year term
from __________ to __________

______________________________ MU/FOREST

MILL(S)		VOLUME (NMm ^{3}) BY SPECIES					
		CONIFER		HARDWOOD		TOTAL	
			Subtotal		Subtotal	ACTUAL	PLAN
A. FROM MU/FOREST							
SUBTOTAL MU/FOREST	ACTUAL						▨
	PLAN					▨	
B. FROM OTHER SOURCES							
SUBTOTAL OTHER SOURCES	ACTUAL						▨
	PLAN					▨	
TOTAL	ACTUAL						▨
	PLAN					▨	

INSTRUCTIONS

TABLE 4.3.2

REPORT OF WOOD UTILIZATION FOR PRIME LICENSEE OR AGREEMENT HOLDER MILL(S)

Complete and include as part of the performance report for past operations for inclusion in the Timber Management Plan for the next period. Indicate the status of the data being reported:

PRELIMINARY - check this box if it is necessary to include in the table, at time of plan submission, some data which are estimates of the actual.

FINAL - check this box if the table contains five years of data in the ACTUAL columns.

Replace this PRELIMINARY table (in all plan copies) with the FINAL table containing the ACTUAL utilization data for the five-year term no later than twelve months following the plan submission.

1. MILLS:
   a) From MU/Forest: Enter the volume by species for each prime licensee or agreement holder mill and subtotal by conifer and hardwood and mill. Enter subtotal for MU/Forest.
   b) From Other Sources: Enter volume utilized from all sources:
      i) roundwood, Crown land, other MUs or Forests, Private land and Free Hold, and outside Ontario.
      ii) Chips by supplying mill.
      iii) Mill residues by supplying mill.

   Subtotal for each mill and enter subtotal by conifer and hardwood for each source indicated.

2. TOTAL: Enter column totals by species and subtotal for conifer and hardwood to indicate species utilization from all sources for all prime licensee or agreement holder mills. For the row indicated by plan in total and both subtotals above, enter corresponding forecast volumes by species from Table 4.18.2 .

3. TOTAL VOLUME:

   ACTUAL - Enter all row totals to indicate the total volume utilized by prime licensee or agreement holder mills from the Management Unit and from Other Sources and the column total to indicate total utilization by the licensee or agreement holder mills from all sources.

   PLAN - Enter corresponding volume estimates from forecast Table 4.18.2 .

   NOTE: This table will be completed during the fifth year of the current term during the preparation of the plan for the next five-year term. At that time actual data may not be available for the fifth year. In lieu of the actual for the fifth year, substitute an estimate of actual that is expected to be utilized. Check PRELIMINARY in the box at the top left-hand corner of the table to indicate that some of the volume data are estimates only.

4. Enter volume in cubic metres. Conversion:
   1 cunit = 2.8317 cubic metres (m^3)
   1 cord = 2.4069 cubic metres (m^3)
   1 cubic metre (m^3) = 35.3147 cubic feet

TABLE 4.4

REPORT
OF
RENEWAL AND MAINTENANCE OPERATIONS

☐ PRELIMINARY
☐ FINAL

for the five-year term
from __________ to __________

______________________________ **MU/FOREST**

	AREA (Ha)							
	RECENT CUTOVER		B&S & NSR		STANDS		TOTAL	
RENEWAL	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
UNEVEN-AGED MANAGEMENT								
Selection Cut - Harvest								
- Improvement								
TOTAL UNEVEN-AGED								
EVEN-AGED MANAGEMENT								
NATURAL REGENERATION								
Clear Cut								
Strip Cut								
Seed Tree Cut								
Shelterwood Cut - Uniform								
- Strips								
SUB-TOTAL NATURAL								
ARTIFICIAL REGENERATION								
Planting - Bareroot (Ha)								
(000's) Trees								
- Container (Ha)								
(000's) Trees								
- Cuttings (Ha)								
(000's) Trees								
Total Planting (Ha)								
(000's) Trees								
Seeding - Direct (Ha)								
- With Site Prep.								
Scarification								
SUB-TOTAL ARTIFICIAL								
TOTAL EVEN-AGED								
TOTAL RENEWAL								
RETREATMENT - Planting (Ha)								
(000's) Trees								
- Seeding								
SITE PREPARATION								
Mechanical								
Chemical								
Prescribed Burn								
TOTAL SITE PREPARATION								
MAINTENANCE								
TENDING								
Cleaning - Manual								
- Chemical - Ground								
- Aerial								
- Mechanical								
Thinning and Improvement								
Pruning								
Fertilization and Cultivation								
Drainage								
TOTAL TENDING								
PROTECTION								
PEST CONTROL - Ground								
- Aerial								
TOTAL PROTECTION								

INSTRUCTIONS

TABLE 4.4

REPORT OF RENEWAL AND MAINTENANCE OPERATIONS

Complete and include as part of the performance report for past operations for inclusion in the Timber Management Plan for the next period.

NOTE: This table will be completed during the fifth year of the current term as part of the report on past operations during the preparation of the plan for the next five-year term. At that time some of the actual area data of renewal and maintenance may not be available for the fifth year. In lieu of the actual data, substitute an estimate of actual that is expected to be completed for the fifth year. Indicate the status of the data being reported:

PRELIMINARY - check this box if it is necessary to include in the table, at time of plan submission, some data which are estimates of the actual.

FINAL - check this box if the table contains five years of actual data in the ACTUAL columns.

A PRELIMINARY table will be replaced with a FINAL table (in all plan copies) no later than twelve months following the plan submission.

1. RENEWAL:

Uneven-aged Management: Area is reported only once in a cutting cycle as selection cut harvest. Any other treatments of any kind are reported as selection cut improvement.

Selection Cut:

Harvest: is the removal of trees either as scattered individuals or in small groups at relatively short intervals and repeated indefinitely. The objective is representation of all size classes distributed throughout stand. The associated area is reported after cutting has occurred and only once in a cutting cycle.

Improvement: includes the improvement of uneven-aged stands whether of a non-commercial or commercial nature.

Even-aged Management:

Natural Regeneration:

Clear Cut: Clear cutting is the removal of the entire growth in one operation from an area wider than five chains. This planned silvicultural clear cut is a regeneration treatment in itself and is commonly associated with the poplar or maple WGs.

Strip Cut: Strip clear cuts or blocks which are less than five chains in width. Only the net area is recorded and reported at the time of the cut. If site preparation is required to complete the prescription, it is reported as site preparation when the operation is conducted.

Seed Tree Cut: Seed tree cut is the operation where trees are left either singly or in groups for seed dispersal. Normally, there would be no harvest of these seed trees. The total area is reported at the time of the cut. If site preparation is required to complete the prescription, it is reported as site preparation when that operation is conducted.

Uniform Shelterwood Cut: The seeding cut where the cutting occurs uniformly across the stand. The total area of the cut stand is reported at the time of the seeding cut.

Artificial Regeneration:

Planting Bare Root: Enter area in hectares and number of trees in thousands. Enter same for Container and Cuttings. Currently the planting of cuttings is limited to non-rooted poplar and willow species.

Seeding: Direct or with site preparation, including the use of the Bracke seeder and seed barrels.

Scarification: Applies exclusively to regeneration of recently harvested jack pine cutovers. By definition it is the only treatment the area receives.

2. RETREATMENT: Includes the planting or seeding of areas which were previously recorded as renewal treatments and have not reached desired stocking.

3. SITE PREPARATION: Do not include chemical applications in conjunction with planting.

4. MAINTENANCE:

Tending: Cleaning, thinning and improvement, pruning, fertilization and cultivation, and drainage.

Protection: The application of pesticides normally will not be forecast on a five-year basis but is scheduled annually and reported annually and in the five-year report.

5. PLAN/ACTUAL: Enter the comparison of planned area of renewal and maintenance operations with actual area treated during the five-year term for each of the three land categories of production forest: Recent Cutover, B&S and NSR, and Stands (FTG).

Plan: Enter the area (hectares) directly from Table 4.19 except for Protection where the cumulative total of all the AWSs (Table 5.4) is entered.

Actual: Enter the cumulative area by renewal and maintenance activity which has been completed during the five-year term. Include any work completed by MNR on FMA forests as part of the phase-in work.

6. TOTAL: Enter area totals for Plan and Actual for all renewal and maintenance activities and complete subtotals as indicated.

TABLE 4.5

☐ PRELIMINARY
☐ FINAL

REPORT
OF
TREE IMPROVEMENT SUPPORT

for the five-year term
from __________ to __________

______________________________ MU/FOREST

TREE IMPROVEMENT CATEGORIES	UNITS	SPECIES								TOTAL	
		Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual
Plus Tree Selection	Trees										
Cone Collection	Hl										
Seed Production Areas											
Established	Ha										
Maintained	Ha										
Seed Collection Areas											
Established	Ha										
Maintained	Ha										
Seed Orchards											
Established	Ha										
Maintained	Ha										

INSTRUCTIONS

TABLE 4.5

REPORT OF TREE IMPROVEMENT SUPPORT

Complete and include as part of the performance report for past operations for inclusion in the Timber Management Plan for the next period. Indicate the status of the data being reported:

PRELIMINARY - check this box if it is necessary to include in the table, at time of plan submission, some data which are estimates of the actual.

FINAL - check this box if the table contains five years of actual data in the ACTUAL columns.

A PRELIMINARY table will be replaced with a FINAL table (in all plan copies) no later than twelve months following the plan submission.

1. PLAN: Enter the quantity (by species) of the tree improvement support work that was planned for the five-year term for each of the categories. Enter directly from Table 4.20 (Forecast of Tree Improvement Support).

2. ACTUAL: Enter the quantity (by species) of the tree improvement support work that was actually completed during the term.
   NOTE: This report table will be completed during the fifth year of the current term during the preparation of the plan for the next five-year term. At that time, actual data may not be available for the fifth year. In lieu of the actual data for the fifth year, substitute an estimate of actual that is expected to be completed. Check PRELIMINARY box at the top left-hand corner of the table.

3. TOTAL: Enter total PLAN and ACTUAL for all species for each of the tree improvement categories.

☐ PRELIMINARY
☐ FINAL

TABLE 4.6

REPORT
OF
ACCESS ROAD CONSTRUCTION AND MAINTENANCE

for the five-year term
from ______ to ______

______________________ **MU/FOREST**

NAME OF ROAD	ROAD LENGTH (in kilometres)					
	Construction & Reconstruction				Maintenance	
	Primary		Secondary			
	PLAN	ACTUAL	PLAN	ACTUAL	PLAN	ACTUAL
TOTAL						

INSTRUCTIONS

TABLE 4.6

REPORT OF ACCESS ROAD CONSTRUCTION AND MAINTENANCE

Complete and include as part of the performance report for past operations for inclusion in the Timber Management Plan for the next period. Indicate the status of the data being reported:

PRELIMINARY - check this box if it is necessary to include in the table, at time of plan submission, some data which are estimates of the actual.

FINAL - check this box if the table contains five years of actual data in the ACTUAL columns.

A PRELIMINARY table will be replaced with a FINAL table (in all plan copies) no later than twelve months following the plan submission.

This report compares the actual kilometres of road construction, reconstruction, and maintenance that were completed during the term with the kilometres that were planned (FORECAST) at the beginning of the term.

1. PLAN: Enter the length of road in kilometres for each road that was planned for the five-year term directly from Table 4.21 for each of the road categories: Primary, Secondary, and Maintenance.

2. ACTUAL: Enter the kilometres for each road that was actually completed during the term.

3. TOTAL: Enter column totals to indicate the comparison for the MU/Forest of PLAN and ACTUAL.

☐ PRELIMINARY
☐ FINAL

TABLE 4.7

REPORT
OF
FTG ASSESSMENT AND SUCCESS

for the five-year term
from __________ to __________

______________________________ MU/FOREST

SUCCESS BY WG/FU							
	Free-to-Grow						
	Assessed (Ha)		Approved (Ha)				
			Age Class				
WG/FU	PLAN	ACTUAL	1-5	6-10	11-15	16-20	TOTAL
Treated							
Subtotal							
Untreated							
Subtotal							
TOTAL							

INSTRUCTIONS

TABLE 4.7

REPORT OF FTG ASSESSMENT AND SUCCESS

Complete and include as part of the performance report for past operations for inclusion in the Timber Management Plan for the next period. Indicate the status of the data being reported:

PRELIMINARY - check this box if it is necessary to include in the table, at time of plan submission, some data which are estimates of the actual.

FINAL - check this box if the table contains five years of actual data in the ACTUAL columns.

A PRELIMINARY table will be replaced with a FINAL table (in all plan copies) no later than twelve months following the plan submission.

1. PLAN: Enter the area (hectares) by WG/FU for treated and untreated regenerating areas that was planned (forecast) for the five-year term. Enter directly from Table 4.22 (Forecast of FTG Assessment).

2. ACTUAL: Enter the area (hectares) by WG/FU for treated and untreated regenerating area that has been assessed for FTG during the term. This actual area is determined by totalling the current area from each of the Annual Reports (Table 6.7.1) for the term.
   NOTE: This report table will be completed during the fifth year of the current term during the preparation of the plan for the next five-year term. At that time, actual data may not be available for the fifth year. In lieu of the actual data for the fifth year, substitute an estimate of actual that is expected to be completed. Check the PRELIMINARY box at the top left-hand corner of the table.

3. APPROVED: Enter the area (hectares) by WG/FU for Treated and Untreated regenerating area that has been assessed and approved during the five-year term. Enter the area by WG under the appropriate five-year age class. Enter totals by WG and subtotals. The source of the area figures entered here is the cumulative total of the approved area from each of the annual reports for the term (Table 6.7.1). Any difference between actual area assessed and area approved should be explained.
   The approved area represents the area of successful regeneration which has been determined by the FTG surveys.

4. TOTAL: Enter total for all columns to indicate the MU/Forest total for the five-year term.

Area which has been confirmed and approved FTG will be returned to the production forest MAD land base and used in the update to Table 4.8.2 for the next term prior to the recalculation of MAD.

4.7 Forest Description

The land base of the management unit or forest is described in terms of productivity, working group or forest unit, and age class in this section. The data included in this section are derived from the Forest Resources Inventory (FRI) reports for the management unit or forest.

The tables which must be included in this section of a Timber Management Plan are:

Table 4.8.1	AREA SUMMARY OF ALL LAND OWNERSHIPS This table shows the stratification of the total area of the management unit into the component areas of water, forested or non-forested, productive and non-productive, and production and non-production forest. This table is not required for FMA forests since they consist entirely of Crown land (FRI ownership code 1) which is summarized in Table 4.8.2.
Table 4.8.2	AREA SUMMARY OF ALL CROWN LAND The same stratification as in Table 4.8.1 is used to show the Crown land (FRI ownership code 1) area breakdown.
Table 4.9	SUMMARY OF CROWN PRODUCTION FOREST AREA The age-class distribution for each working group/forest unit is shown for the production forest area from Table 4.8.2.

Additional area and age-class summaries may be required where other land ownerships are included in order-in-council timber licences. In this case, tables in the same format as tables 4.8.2 and 4.9 must be included for the licensed land in each ownership class. Copies of these forest-description tables from previous plans should be included in the appendices until such time as a new FRI is completed. Any significant changes in successive tables should be discussed in the text of this section to help explain the results of past management, to guide future operations, and to support any changes in strategy.

Reference should be made to any inventory, soil or site survey, or NSR survey that has affected the land-base data since the previous plan was submitted. Comments would also be appropriate here regarding any major stand disturbances that have contributed to the present forest composition and which may affect management.

TABLE 4.8.1

AREA SUMMARY OF ALL LAND OWNERSHIPS*

for the five-year term
from ____________ to ____________

____ MU/FOREST

SUMMARY OF TOTAL AREA (Ha)

Water		
Non-Forested Land		
Forested Land		
-Non-Productive Forest		
-Productive Forest		
Total Area		

SUMMARY OF PRODUCTIVE FOREST (Ha)

WG/FU	PROTECTION FOREST SC 4 & ISLANDS	PRODUCTION FOREST				TOTAL
		B&S and/or NSR 2-6	PFR	Regular	Subtotal	
TOTAL						

---

* This summary is not required to be completed for FMA forests.

INSTRUCTIONS

TABLE 4.8.1

AREA SUMMARY OF ALL LAND OWNERSHIPS

1. Complete for all non-FMA management units. (Not required for FMA forests.)

2. Enter area fiqures, from FRI Report #'s 3 and 4 and FRIROS* Report #'s 1 and 2, for all land ownerships in the entire area within the MU boundary. Includes Crown Land (FRI Code#1), Parks (FRI Code#5), Patent Land (FRI Code#3), etc.

3. **Productive Forest = Production Forest + Protection Forest (SC4)**

   Enter the productive forest land area for each Working Group or Forest Unit by:
   PROTECTION FOREST SC4 & ISLANDS --> Site Class 4 including PF islands.
   B&S --> Barren and Scattered.
   NSR 2-6 --> Not Sufficiently Regenerated Classes 2 through 6.
   PFR --> Production Forest Reserve.
   REGULAR --> Site Classes X, 1, 2, 3 less PFR.

4. Enter totals and subtotals as required.

5. Enter all area figures in hectares. Conversion: 1 hectare = 2.471 acres
   1 acre = 0.405 hectares

   NOTE: Additional optional tables may be completed for specific land ownerships (e.g., Parks, Patent land) using the format of Table 4.8.__ (e.g., Parks 4.8.3 , Patent Land 4.8.4 , etc.).

---

* Forest Resource Inventory Report Operation System.

TABLE 4.8.2

AREA SUMMARY OF ALL CROWN LAND*

for the five-year term
from __________ to __________

________________________________ MU/FOREST

SUMMARY OF TOTAL AREA (Ha)		
Water		______
Non-Forested Land		______
Forested Land		
-Non-Productive Forest	______	
-Productive Forest	______	
		______
Total Area		______

SUMMARY OF PRODUCTIVE FOREST (Ha)

WG/FU	PROTECTION FOREST SC 4 & ISLANDS	PRODUCTION FOREST					TOTAL
		B&S and/or NSR 2-6	MAD Land Base			Subtotal	
			PFR	Regular	Subtotal		
TOTAL							

---

* Crown ownership FRI code 1.

INSTRUCTIONS

TABLE 4.8.2

AREA SUMMARY OF ALL CROWN LAND

1. Complete for all Management Units/Forests.

2. Enter area figures, from FRI Report #'s 3 and 4 and FRIROS* Report #'s 1 and 2, for Crown Land Code #1 for MUs. For FMA forests the table provides an area breakdown of the area contained within the agreement boundary. The total area in hectares will equal the total area given in the agreement.

3. **Productive Forest = Production Forest + Protection Forest (SC4)**

   Enter the productive forest land area for each Working Group or Forest Unit by:
   PROTECTION FOREST SC4 & ISLANDS --> Site Class 4 including PF islands.
   B&S --> Barren and Scattered.
   NSR 2-6 --> Not Sufficiently Regenerated Classes 2 through 6.
   MAD LAND BASE --> The free-to-grow area used to calculate the maximum allowable depletion (MAD).
   PFR --> Production Forest Reserve.
   REGULAR --> Site Classes X, 1, 2, 3 less PFR.

4. Enter totals and subtotals as required.

5. Enter all area figures in hectares. Conversion: 1 hectare = 2.471 acres
   1 acre = 0.405 hectares

   Note: The MAD land base from this table is the basis for the MAD calculation and projections which are summarized in Table 4.14 .

---

* Forest Resource Inventory Report Operation System.

TABLE 4.8.__

AREA SUMMARY OF _______ LAND*

for the five-year term
from __________ to __________

________________________________ MU/FOREST

SUMMARY OF TOTAL AREA (Ha)

Water ______________

Non-Forested Land ______________

Forested Land
- -Non-Productive Forest ______________
- -Productive Forest ______________

____

Total Area ______________

SUMMARY OF PRODUCTIVE FOREST (Ha)

WG/FU	PROTECTION FOREST SC 4 & ISLANDS	PRODUCTION FOREST				TOTAL
		B&S and/or NSR 2-6	PFR	Regular	Subtotal	
TOTAL						

---

* _______ ownership FRI code ___.

INSTRUCTIONS

TABLE 4.8.2

AREA SUMMARY OF __________ LAND

This table can be completed for specific land ownerships (e.g., Parks, Patent Land, Indian Reserves) as required. Follow the instruction for Table 4.8.1 and enter the area for the land ownership being summarized.

TABLE 4.9

SUMMARY OF CROWN* PRODUCTION FOREST AREA BY AGE CLASS
(Maximum Allowable Depletion Land Base)

for the five-year term
from __________ to __________

______________________________ MU/FOREST

WG/FU	AGE CLASS	AREA (Ha)	WG/FU	AGE CLASS	AREA (Ha)

* FRI ownership code 1.

INSTRUCTIONS

TABLE 4.9

SUMMARY OF CROWN PRODUCTION FOREST AREA BY AGE CLASS

This table displays the age class distribution for the FTG Area of the Production Forest (MAD land base, Table 4.8.2) which is used as the basis for the maximum allowable depletion (MAD) calculation for the current term and the projections for the three subsequent terms of the plan (see Table 4.14).

Source of Data: FRI Report #2, ownership code #1, provides the basic inventory data for this table. The data are updated every five years using change data prior to plan preparation.

1. WG/FU: Enter the Working Group/Forest Unit.

2. AGE CLASS: The format of the table allows for the entry of data by either twenty-year or five-year age classes. Normally, five-year age classes will be utilized in the MAD calculations and that base will be provided here.

   For even-age management, enter five-year age classes. No age is required for the selection system.

3. AREA: Even-Age Management: Enter area in hectares for each WG/FU and age class.
   Uneven-Age Management: Enter WG/FU total area only.

   Enter subtotals for each WG/FU. These WG/FU totals will be the same as those in the SUBTOTAL column for the MAD land base (Table 4.8.2). Enter TOTAL for the MU/Forest.

4. Enter all figures in hectares. Conversion: 1 hectare = 2.471 acres
   1 acre = 0.405 hectares

4.8 Timber Management Objectives and Strategies

The District Land Use Guidelines established management objectives and broad program strategies. The management objectives had an associated timber-production target which was expressed in terms of the annual volume production to be met by a specific year (i.e., 2000 or 2020). Since most of the MNR's administrative districts encompass more than one management unit or forest, a further refinement of district management objectives, production targets, and management strategies for the individual management unit or forest is required.

This section of the management plan contains:

- the objective which will direct timber management operations on the unit/forest;
- the production target which will represent the unit/forest's contribution to the achievement of the assigned district target; and
- the management strategies which will be employed to attain the management objectives and achieve the production target.

4.8.1 Management Objectives

The objective of the forest management program on Crown land in Ontario is to provide for an optimum continuous contribution to the economy by forest-based industries consistent with sound environmental practices and to provide for other uses of the forest. This will therefore be the primary objective of each management unit or forest.

The three basic components of this objective are:

- to produce and maintain a wood supply which provides for an optimum continuous contribution to the economy by the wood-utilizing industry;
- to minimize the negative impacts and where possible, maintain or enhance environmental quality; and
- to ensure that timber management operations do not detract from the ability of other resource management programs to provide opportunities for other uses of the Crown land resource (i.e., integrated resource management).

The production component of the program objective must be stated quantitatively in terms of a timber-production target which represents the management unit or forest's contribution to the achievement of the district target. However, the environmental quality and integrated resource management objectives can only be stated in qualitative terms. Other objectives which have been stated or targets which may have been assigned to higher levels of planning must be included in this section of the Timber Management Plan.

Any revisions to the objectives and targets from those stated in previous management plans should be highlighted and explained in the text of this section.

4.8.2 Management Strategies

A management strategy outlines the manner in which the stated objectives will be achieved. General strategies have been established in the MNR's land-use-planning exercise and are documented in the District Land Use Guidelines. More detailed strategies must be developed which will guide operations for the twenty-year period of the Timber Management Plan.

The management strategies which are developed specifically for the individual unit or forest will establish the framework upon which the operations forecast for the five-year term of the plan are based.

This section of the plan must include all of the general strategies assigned by higher levels of planning and the detailed strategies developed specifically in the Timber Management Plan. A discussion of the effect of these strategies on operations and any expected problems of implementation must also be included.

The table which is required in this section of the Timber Management Plan is:

Table 4.10	MANAGEMENT GUIDELINES FOR LAND USE AREAS OR STRATEGIES FOR GENERAL RESOURCE AREAS This table summarizes the land-use intent, the acceptability of timber management, and the guidelines or strategies for timber management within the land use areas or general resource areas designated in the District Land Use Guidelines.

The effects on timber management of the various restrictions, guidelines, and strategies must be discussed in the text of this section of the plan.

TABLE 4.10

MANAGEMENT GUIDELINES FOR LAND USE AREAS
OR
STRATEGIES FOR GENERAL RESOURCE AREAS

____________________ MU/FOREST

LAND USE AREA OR GENERAL RESOURCE AREA	LAND USE INTENT	TIMBER MANAGEMENT ACCEPTABLE		MANAGEMENT GUIDELINES OR STRATEGIES FOR FORESTRY
		YES	NO	

INSTRUCTIONS

TABLE 4.10

MANAGEMENT GUIDELINES FOR LAND USE AREAS OR STRATEGIES FOR GENERAL RESOURCE AREAS

1. Complete the table for each of the Land Use Areas or General Resource Areas that are located in whole or in part in the Management Unit/Forest.
2. Enter each Land Use Area/General Resource Area by listing and completing the information requested under the other column headings of the table.
3. The information for completing the table is found in the District Land Use Guidelines and can be copied directly.
4. The Land Use Areas/General Resource Areas are shown on the Management Map in Section 4.5 of the plan.

4.9 Silvicultural Ground Rules

The principal means by which timber management objectives for the management unit or forest are achieved is through the application of silvicultural systems of management. There are three basic silvicultural systems employed in the management of the timber resource in Ontario: the clear-cut system, the shelterwood system, and the selection system. Associated with each of these systems are a number of harvesting methods. In turn, various combinations of renewal and maintenance treatments are associated with each harvesting method, depending upon the current working group, desired working group, and site characteristics.

4.9.1 Normal Operations

Using the silvicultural guidelines which are available, all of the various treatment regimes of harvest method, renewal treatments, and maintenance treatments which may be applied to areas allocated for operations must be indicated.

The table which is required in this section of a Timber Management Plan is:

Table 4.11	SILVICULTURAL GROUND RULES FOR NORMAL OPERATIONS This table shows for each combination of current working group, site, and desired working group the various options of treatment regimes (i.e., harvest method, renewal treatment, and maintenance treatment).

TABLE 4.11

SILVICULTURAL GROUND RULES FOR NORMAL OPERATIONS

for the five-year term
from__________ to __________

__________________________________ MU/FOREST

					RENEWAL TREATMENT DESCRIPTION	STOCKING STANDARDS			MAINTENANCE TREATMENT DESCRIPTION
						To Prop. WG/FU		Min. To Accept. Species	
FRI WG	Site Description	Prop. WG/FU	Silviculture System	Method of Harvest	Site Preparation/Regeneration	Min.	Des		Tending/Protection

INSTRUCTIONS

TABLE 4.11

SILVICULTURAL GROUND RULES FOR NORMAL OPERATIONS

1. Complete for the twenty-year management period. For company MUs, MNR will complete in consultation with the company.

2. FRI WG: Working Group at the beginning of the management period.

3. Site Description: Describe the various sites on which each working group is found by whatever site description is used in the MU/Forest.

4. Prop. WG/FU: Enter the proposed working group or forest unit (may or may not be the same as FRI WG).

5. Silviculture System: Enter the silvicultural system that will be used for each working group or forest unit. There are three systems in use in Ontario: the clear cut, selection, and shelterwood systems. The shelterwood system is divided into two subsystems, the uniform shelterwood and the strip shelterwood. The system or subsystem chosen depends on the species, forest unit, and the condition of the forest. Guidance for which to use is given in the provincial and regional silvicultural guides for the working groups.

6. Method of Harvest: Enter the harvesting method to be used. Where there are options, give them in order of preference, with the conditions that will be used to guide the choice. For example, clear cutting (for subsequent planting) might be the first choice, but strip cutting (for subsequent site preparation and natural regeneration) might be the choice when the area is more than 1.5 km from an all-weather road.

7. Renewal Treatment Description: Enter the renewal options in order of preference and with the conditions that will be used to guide the choice. The need for site preparation is included here.

8. Stocking Standards: Enter the minimum stocking of the WG species, below which the regeneration must be considered a failure. Enter also the desired level of stocking that the prescription is intended to achieve. Name the acceptable species that may contribute to the desired stocking. Other standards such as quality or number of trees per hectare may be used where applicable.

9. Maintenance Treatment Description: Enter the tending and protection options which can be expected to be applied in order to assist the renewal treatment to reach FTG and to maintain that condition.

4.9.2 Modified Operations

The management prescriptions which have been developed for application within areas allocated for modified operations must be listed. The prescriptions may have been developed for individual features or values such as a specific lake or a particular segment of a river. Alternatively, generic prescriptions may have been developed for associated types of features or values such as all lake trout lakes or all designated canoe routes. However the exercise of determining prescriptions may have been conducted, the results of that part of the planning process are included in this section.

The table which is required in this section of a Timber Management Plan is:

Table 4.12 SILVICULTURAL GROUND RULES FOR MODIFIED OPERATIONS
This table shows for each specific physical feature or value or associated type of feature or value the management prescriptions which will be applied in areas which need modification to operations because of protection or enhancement requirements of the feature or value identified.

The primary basis for the management prescriptions will be information contained in DLUGs, other resource management plans or guidelines, or on-site information.

TABLE 4.12

SILVICULTURAL GROUND RULES FOR MODIFIED OPERATIONS

for the five-year term
from __________ to __________

______________________________ MU/FOREST

PHYSICAL FEATURE OR VALUE	TIMBER MANAGEMENT PRESCRIPTION

INSTRUCTIONS

TABLE 4.12

SILVICULTURAL GROUND RULES FOR MODIFIED OPERATIONS

Complete table for all areas which have been allocated for modified operations during the five-year term and include in the Timber Management Plan. The table presents the results of the planning process which has dealt with the identified areas of concern and has resulted in modified operations.

1. PHYSICAL FEATURE OR VALUE: Enter the specific feature or value (i.e., lake, nesting site, spawning area, canoe route, etc.) and/or a type of feature (i.e., lake trout lakes, warm-water fishery, designated canoe routes, spawning areas).

2. TIMBER MANAGEMENT PRESCRIPTION: For each feature or value or type, enter timber prescriptions which are appropriate for modified operations which will be carried out in the vicinity of the identified feature or associated type of feature or value. This prescription will include harvest and renewal and maintenance considerations. The stand-by-stand detail will be contained in the stand listings.

Source: The prescriptions will be based upon information drawn from District Land Use Guidelines, other resource management plans, public input, and the various guidelines which have been prepared (e.g., tourism, deer habitat management, and fisheries guidelines).

4.10 Maximum Allowable Depletion

In this section the calculated maximum allowable depletion (MAD) is displayed and compared to the actual area allocated for depletion during the five-year term of the plan. In addition, the disposition of the MAD is shown and the surplus area indicated.

Any changes in the criteria for calculating the MAD must be justified. Changes in the calculated MAD from that of previous plans must be highlighted and the significance of the change discussed.

The tables which must be included in this section of a Timber Management Plan are:

Table 4.13	CRITERIA FOR MAD CALCULATION The criteria which have been used in the MAD calculation are recorded in this table.
Table 4.14	MAXIMUM ALLOWABLE DEPLETION SUMMARY The MAD is displayed by working group or forest unit, age class, and silvicultural system or method of calculation (e.g., clear-cut OWOSFOP, three-cut uniform shelterwood). In addition to the MAD calculated for the current five-year term, the MAD for the past five-year term (from the previous plan) and the projected MAD for the next three five-year terms in the twenty-year period of the plan are also shown in the table.

TABLE 4.13

CRITERIA FOR MAD CALCULATION

for the five-year term
from __________ to __________

______________________________ MU/FOREST

WG/FU	Rotation or Cutting Cycle	Regen Success* (%)	Years to FTG *	Roads & Landings* (%)	NSR Renewal Rate* (%)

* Only required for OWOSFOP or similar calculations.

INSTRUCTIONS

TABLE 4.13

CRITERIA FOR MAD CALCULATION

Enter the criteria used in the calculation of the Maximum Allowable Depletion (MAD).

1. UNIFORM SHELTERWOOD AND SELECTION SYSTEMS: Enter WG/FU and rotation or cutting cycle only.

2. CLEAR CUT AND STRIP SHELTERWOOD SYSTEMS: Enter all pertinent criteria used in the calculation of the MAD for the current term and the prediction (using OWOSFOP model or similar calculation) for the subsequent terms of the management period.

3. Definition of Terms:
   WG/FU: Working Group/Forest Unit
   Rotation or Cutting Cycle: Period, in years, from harvest to harvest.
   Regen Success: Enter expected success of regeneration treatment by WG/FU.
   Years to FTG: Enter expected number of years required for each WG/FU to reach the free-to-grow (FTG) condition.
   Roads & Landings: Enter the percent of the MAD land base that can be expected to be taken out of production forest due to its use for roads and landings for the five-year term.
   NSR Renewal Rate: Enter the percent of the Not Sufficiently Regenerated (NSR) area by WG/FU that is expected to become FTG during the five-year term.

TABLE 4.14

MAXIMUM ALLOWABLE DEPLETION SUMMARY

for the five-year term
from __________ to __________

______________________________ MU/FOREST

WG/FU	AGE CLASS	SILVICULTURAL SYSTEM/METHOD OF CALCULATION	PAST	CURRENT	PROJECTED		
			5-Year Term ____ to ____ (Ha)	5-Year Term ____ to ____ (Ha)	2nd 5-Year Term ____ to ____ (Ha)	3rd 5-Year Term ____ to ____ (Ha)	4th 5-Year Term ____ to ____ (Ha)
TOTAL							

INSTRUCTIONS

TABLE 4.14

MAXIMUM ALLOWABLE DEPLETION SUMMARY

1. Enter the maximum allowable depletion (MAD) area (ha) by WG/FU, five-year age classes, and Silviculture System/Method of Calculation for the past five-year term, the current five-year term, and the three projected five-year terms of the twenty-year period. Enter subtotals for each WG and total for the MU/Forest.
2. The MAD is calculated using the land base given in Tables 4.8.2 and 4.9 and according to the Technical Procedure Bulletin which is appended to this manual.
3. The MAD is recalculated every five years for each new management plan and a new Table 4.14 will be completed.
4. Enter the years for the beginning and end of the five-year term. Years are MNR fiscal years (April 1st to March 31st).

4.11 Allocation

The section on allocation is divided into two main components: depletion, and renewal and maintenance. In this section the criteria according to which areas are allocated for either depletion or renewal and maintenance are established, and the areas which are eligible under these criteria are identified. Of the eligible areas, those which are allocated for operations during the five-year term of the plan are shown and summarized. Finally, the disposition of the areas allocated for depletion is shown, and the utilization of the timber volume available from those areas is projected.

4.11.1 Depletion

The allocation of areas for depletion is one of the most important sections of a Timber Management Plan. Controlling harvest depletion is the primary tool used to ensure the balance of growth and depletion which is necessary to achieve the objective of providing the optimum continuous contribution to the economy by the forest-based industry.

This section of a Timber Management Plan must include the results of the planning process concerning the following topics:

- areas eligible for allocation for depletion during the twenty-year period of the plan;
- preliminary identification of areas of concern;
- areas allocated for depletion during the five-year term of the plan;
- disposition of the area allocated for depletion; and
- forecast of wood utilization.

4.11.1.1 Areas Eligible for Allocation for Depletion

In this section of the Timber Management Plan the criteria upon which areas would be considered as eligible for allocation are listed. In addition, all areas which meet the eligibility criteria must be identified on FRI composite maps which are included as appendices. This will provide a visual presentation of the areas which may be allocated during the twenty-year period of the plan.

4.11.1.2 Preliminary Identification of Areas of Concern

On the map used to identify the areas which are eligible for allocation for depletion those areas of concern which may be affected by operation in areas eligible for allocation must be shown. An accompanying description of the resource values which require protection in each area must be included in the appendices.

4.11.1.3 Allocation for Depletion

The areas which are allocated for depletion are summarized in this section. This forecast of depletion by area must be shown in tabular form and illustrated on maps which are included as appendices. The table which is required in this section is:

Table 4.15 FORECAST OF DEPLETION AREA

This table shows, by working group or forest unit and age class, the area which has been allocated for depletion as normal or modified harvest operations or as reserves. The area is then compared to MAD.

The difference between the allocated depletion area and MAD must be discussed in the text of this section. The areas which are allocated must be shown on two sets of maps. On either FRI mapsheets or FRI composite maps, the areas allocated for depletion for normal harvest, modified harvest, or as reserves are shown. On a 1:250 000 scale map the depletion allocation is illustrated in order to provide an overall view of the allocation for the unit or forest. These maps will be included as appendices in the plan and references to them must be made in the text of this section.

TABLE 4.15

FORECAST OF DEPLETION BY AREA

for the five-year term
from__________ to __________

______________________________ MU/FOREST

WG/FU	AGE CLASS	DEPLETION AREA (Ha)					MAD	DIFF. MAD - TOTAL
		HARVEST						
		NORMAL	MODIFIED	SUBTOTAL	RESERVE	TOTAL		
TOTAL								

INSTRUCTIONS

TABLE 4.15

FORECAST OF DEPLETION AREA

Complete this table with the estimate of area depletion which is planned for the five-year term and include in the Timber Management Plan.

1. WG/FU: Enter working group/forest unit.

2. AGE CLASS: Enter five-year age classes applicable to the MAD and allocated area. No age is required for the selection system.

3. DEPLETION AREA: Enter the allocated area in hectares by WG/FU and five-year age class broken down into harvest (normal and modified) and reserve area.
   Normal: Enter the area by WG/FU and age class that is planned for harvest depletion with prescriptions based upon the silvicultural ground rules for normal operations (Table 4.11).
   Modified: Enter the area by WG/FU and age class that is planned for harvest with prescriptions prepared using the silvicultural ground rules for modified operations (Table 4.12).
   Enter subtotals by WG/FU.
   Subtotal: Enter total normal harvest plus modified harvest area by WG/FU and age class. Enter row subtotals by WG/FU.

4. RESERVE: Enter the area by WG/FU by age class for which harvest operations are not permitted in allocated stands during the five-year term according to the prescriptions for modified operations. Enter WG/FU subtotals.

5. TOTAL: Enter the sum of Subtotal Harvest plus Reserve for each WG/FU and age class and subtotal by WG/FU.
   Source: The stand listings for the five-year term will provide the stand area breakdown by normal, modified, and reserve which is the source of the data for this table.

6. MAD: Enter maximum allowable depletion area by WG/FU and age class from Table 4.14, CURRENT column.

7. Difference: Subtract the Total forecast depletion area by WG/FU and age class from the MAD area by WG/FU and age class and enter the difference and indicate whether the result is a negative or positive number. Where the difference indicates a younger age class stand(s) being substituted for older age class stands, the implications are to be addressed in the management strategies (Section 4.8.2). Enter row totals by WG/FU.

8. Enter all area figures in hectares. Conversion: 1 hectare = 2.471 acres
   1 acre = 0.405 hectares

4.11.1.4 Disposition of Allocated Area

The planned disposition of allocated area is outlined in this section. The MAD, area available for harvest, planned harvest by licensee (or licence type), and estimates of area surpluses or deficits are identified in this section and discussed. In the case of FMAs, surpluses are declared in this section. If, in Table 4.16, the declared surplus does not equal the estimated surplus, the difference must be explained. If a surplus is declared, the Minister may (after consultation with the company) dispose of it if markets are available. To facilitate this disposal, allocated areas which are included in the declared surplus must be indicated on the depletion-allocation map required in Section 4.11.1.3. If a deficit is forecast, where the planned harvest exceeds MAD, there must be a discussion of the reasons for the deficit and the manner in which the planned harvest and MAD will be balanced to offset the deficit in subsequent plans.

The table required in this section of the plan is:

Table 4.16	FORECAST DISPOSITION OF MAXIMUM ALLOWABLE DEPLETION AREA This table shows, by working group or forest unit, the MAD, allocated area, reserves, area available for harvest, planned harvest, estimated surplus or deficit, and declared surplus.

TABLE 4.16

FORECAST DISPOSITION OF MAXIMUM ALLOWABLE DEPLETION AREA

for the five-year term
from __________ to __________

______________________________ MU/FOREST

	AREA BY WG/FU (Ha)	
		TOTAL
1. MAD		
2. ALLOCATED AREA		
3. RESERVES		
4. AVAILABLE FOR HARVEST (2-3)		
5. PLANNED HARVEST (By Licensee)		
TOTAL PLANNED HARVEST		
6. ESTIMATED SURPLUS or DEFICIT (1-5)		
7. DECLARED SURPLUS		

INSTRUCTIONS

TABLE 4.16

FORECAST DISPOSITION OF MAXIMUM ALLOWABLE DEPLETION AREA

1. MAD: Enter CURRENT MAD by WG/FU from Table 4.14 .

2. ALLOCATED AREA: Enter area by WG/FU of allocated area for the five-year term. Enter WG/FU subtotals from the DEPLETION AREA TOTAL column in Table 4.15 .

3. RESERVES: Enter area by WG/FU for which harvest operations are not permitted in allocated stands during the five-year term according to the prescriptions for modified operations. Enter WG/FU subtotals from the RESERVE column in Table 4.15 .

4. AVAILABLE FOR HARVEST: Subtract the area in RESERVES from the ALLOCATED AREA by WG/FU and enter the difference in AVAILABLE FOR HARVEST. This will equal the WG/FU subtotals in the HARVEST SUBTOTAL column in Table 4.15 .

5. PLANNED HARVEST: List all licensees, including third party and Order in Council and District Cutting Licences, that are planned to harvest timber from the MU/Forest during the term. Licensees for some methods of disposal may be grouped (e.g., DCLs and Tender Sales).
   Types of licensees:
      - O.C. - Order in Council
      - DCL - District Cutting Licence
      - Sale By Tender
      - Salvage
      - FMA - Forest Management Agreement
      - TSA - Timber Sales Agreement

   Enter area by WG/FU for each licensee and total for the MU/Forest.

6. ESTIMATED SURPLUS/DEFICIT: Subtract the TOTAL PLANNED HARVEST from MAD (1-5) and enter the difference by WG/FU, indicating a surplus or deficit.

7. DECLARED SURPLUS: If a surplus is estimated above, make the same entry as Declared Surplus unless a case is presented for retaining and utilizing all or a portion of any surplus. Any such case must be outlined and described in Management Strategies (Section 4.8.2).

8. Enter area in hectares. Conversion: 1 hectare = 2.471 acres
   1 acre = 0.405 hectares

4.11.1.5 Wood Utilization

The wood-utilization section of the plan provides the estimates of the volume, by species and working group or forest unit, which is available from the area allocated for depletion. It also forecasts the utilization of wood from the unit or forest by consumer and identifies volume surpluses where they occur. The text must discuss the data base and methodology used to determine, first, the volume available from the allocated area, and second, the forecast utilization by consumer. For FMA forests or company units, a forecast of mill supply must be provided.

If for some reason all of the volume estimated to be on the areas allocated for depletion may not be available for harvest, reductions may be made. This will result in the estimated available-volume figures in Table 4.18.1 differing from the volume totals in Table 4.17. Any reductions must be explained and justified.

The tables which are required in this section of the Timber Management Plan are:

Table 4.17	VOLUME ESTIMATES FOR THE AREA OF THE ALLOCATED DEPLETION The table gives the volumes, by species and working group or forest unit, which are estimated to be available on the area allocated for depletion.
Table 4.18.1	FORECAST OF WOOD UTILIZATION FROM THE MANAGEMENT UNIT OR FOREST The table gives the volumes, by species, which are forecast to be utilized by licensee or licence type. This forecast utilization is compared to the volume available from Table 4.16, and surplus volume is identified.
Table 4.18.2	FORECAST OF WOOD UTILIZATION FOR PRIME LICENSEE OR AGREEMENT-HOLDER (MILLS) The forecast of wood utilization by the mills of the prime licensee or company management units or the agreement holder for FMA forests is shown by species. This forecast is required for both wood received from the unit and for wood received from other sources.

TABLE 4.17

FORECAST VOLUME ESTIMATES FOR THE AREA OF THE ALLOCATED DEPLETION

for the five-year term
from __________ to __________

______________________________ MU/FOREST

WG/FU	ALLOCATED AREA (Ha)	VOLUME (NMm ^{3}) BY SPECIES				
		CONIFER		HARDWOOD		TOTAL
			Subtotal		Subtotal	
Subtotal Conifer WG						
Subtotal Hardwood WG						
TOTAL						

INSTRUCTIONS

TABLE 4.17

FORECAST VOLUME ESTIMATES FOR THE AREA OF THE ALLOCATED DEPLETION

1. WG/FU: Working Group/Forest Unit.
2. ALLOCATED AREA: Enter allocated area by WG/FU for the five-year term. Enter WG/FU subtotals from the DEPLETION AREA TOTAL column Table 4.15 .
3. VOLUME: Enter the volume in net merchantable cubic metres (NMm^3) by species for the allocated area by WG/FU. The source of the volume data and the method used will be explained in the text of the Timber Management Plan.
4. Complete all subtotals and totals as indicated.
5. Enter area in hectares and volume in cubic metres.

   Conversion:
   1 hectare = 2.471 acres
   1 cunit = 2.8317 cubic metres (m^3)
   1 cord = 2.4069 cubic metres (m^3)
   1 cubic metre (m^3) = 35.3147 cubic feet

TABLE 4.18.1

FORECAST OF WOOD UTILIZATION BY LICENSEE

for the five-year term
from __________ to __________

______________________________ MU/FOREST

CONSUMER(S) (By Licensee)	VOLUME (NMm ^{3}) BY SPECIES				
	CONIFER		HARDWOOD		TOTAL
		Subtotal		Subtotal	
TOTAL PLANNED VOLUME					
ESTIMATED AVAILABLE VOLUME					
ESTIMATED SURPLUS VOLUME					

INSTRUCTIONS

TABLE 4.18.1

FORECAST OF WOOD UTILIZATION BY LICENSEE

1. CONSUMER(S): List all licensees, including third party and Order in Council and District Cutting Licences, that are planned to harvest from the MU/Forest during the term. Licensees for some methods of disposal may be grouped (e.g., DCLs and Tender Sales).
   Types of licensees:
      O.C. - Order in Council
      DCL - District Cutting Licence
      Sale By Tender
      Salvage
      FMA - Forest Management Agreement
      TSA - Timber Sale Agreement
   This list should be the same as in Table 4.16.

2. VOLUME: Source--> Operational stand volumes by species, from the stand listings, totalled by licensee for the area of PLANNED HARVEST (by licensee) from Table 4.16 .
   Enter volume by species of planned harvest by licensee in net merchantable cubic metres (NMm^3). Subtotal by conifer and hardwood and enter row totals for all species by licensee in TOTAL VOLUME.

3. TOTAL PLANNED VOLUME: Enter column totals by species.

4. ESTIMATED AVAILABLE VOLUME: Enter volume by species for the Available For Harvest area given in Table 4.16 . An estimate of available volume can be obtained by subtracting the volume by species for the area in RESERVE column from the species volume estimates for the allocated area (Table 4.17).

5. ESTIMATED SURPLUS VOLUME: Enter the difference between TOTAL PLANNED VOLUME and ESTIMATED AVAILABLE VOLUME.

6. Enter volume in cubic metres. Conversion:
   1 cunit = 2.8317 cubic metres (m^3)
   1 cord = 2.4069 cubic metres (m^3)
   1 cubic metre (m^3) = 35.3147 cubic feet

TABLE 4.18.2

FORECAST OF WOOD UTILIZATION FOR PRIME LICENSEE OR AGREEMENT HOLDER MILL(S)

for the five-year term
from __________ to __________

______________________________ MU/FOREST

MILL(S)	VOLUME (NMm^3) BY SPECIES				
	CONIFER		HARDWOOD		TOTAL
		Subtotal		Subtotal	
A. FROM MU/FOREST					
SUBTOTAL MU/FOREST					
B. FROM OTHER SOURCES					
SUBTOTAL OTHER SOURCES					
TOTAL					

INSTRUCTIONS

TABLE 4.18.2

FORECAST OF WOOD UTILIZATION FOR PRIME LICENSEE OR AGREEMENT HOLDER MILL(S)

Complete this table for company MUs and FMA forests for mill wood utilization that is planned for the five-year term and include in the Timber Management Plan.

1. MILLS:
    a) From MU/Forest: List prime licensee or agreement holder mills which are forecast to receive wood from this MU/Forest. Enter the volume by species that is forecast to be utilized for each mill and subtotal by conifer and hardwood. Enter subtotal for MU/Forest.
    b) From Other Sources: For each mill in part a), list other sources for the following main categories:
        i) roundwood, Crown land, other MUs or Forests, Private land and Free Hold, and outside Ontario.
        ii) Chips by supplying mill.
        iii) Mill residues by supplying mill.

2. VOLUME: Enter volume in net merchantable cubic metres (NMm^3) by species for roundwood and total conifer and hardwood. For chips and mill residues, enter the volume in net merchantable cubic metres as total conifer and/or hardwood only (i.e., no need to identify speices).

    For both (a) and (b), enter subtotals by individual mill.

3. TOTAL: Enter all column totals to indicate forecast utilization for all company mills from all sources.

4. TOTAL VOLUME: Enter total volume (all species) for each mill and source; the total of this column will indicate the total forecasted wood utilization for all the prime licensee or agreement holder mills.

5. Enter volume in cubic metres. Conversion:
    1 cunit = 2.8317 cubic metres (m^3)
    1 cord = 2.4069 cubic metres (m^3)
    1 cubic metre (m^3) = 35.3147 cubic feet

4.11.2 Renewal and Maintenance

The allocation of areas for renewal and maintenance operations identifies the areas on which silvicultural treatments other than harvesting will take place. This section of a Timber Management Plan must include the results of the planning process concerning the following topics:

- areas eligible for allocation for renewal and maintenance during the twenty-year period of the plan;
- preliminary identification of areas of concern; and
- areas allocated for renewal and maintenance during the five-year term of the plan.

4.11.2.1 Areas Eligible for Allocation for Renewal or Maintenance

In this section of the Timber Management Plan the criteria under which areas would be considered as eligible for allocation are listed. In addition, all areas which meet the eligibility criteria must be identified on FRI composite maps which are included as appendices. This will provide a visual presentation of the areas which may be allocated during the twenty-year period of the plan.

Due to the unpredictability of insect and disease outbreaks the areas which are eligible for protection operations are identified for the five-year term of the plan rather than the twenty-year period. Identification of areas where protection treatments might be applied if determined to be necessary on an annual basis is required.

4.11.2.2 Preliminary Identification of Areas of Concern

On the map used to identify the areas which are eligible for renewal and maintenance, those areas of concern which may be affected by operations in areas eligible for allocation must be shown.

Where the areas eligible for allocation for renewal or maintenance overlap with areas eligible for allocation, the designation of areas of concern will be identical. However, on areas such as B+S, NSR, or backlog there may be additional areas of concern identified and these must also be shown. A description of the resource values which require protection in each of these additional areas must also be listed and included in the appendices.

4.11.2.3 Allocation for Renewal and Maintenance

The areas which are allocated for renewal and maintenance are summarized in this section. This forecast of renewal and maintenance is shown in tabular form and illustrated on maps which are included as appendices.

The table which is required in this section of the plan is:

Table 4.19 FORECAST OF RENEWAL AND MAINTENANCE OPERATIONS
This table summarizes the renewal and maintenance operations which are forecasted for recent cutover, B+S or NSR, and existing stands.

Due to the unpredictability of insect and disease outbreaks, areas are not normally allocated for protection treatments at the five-year planning stage and, therefore, are not normally included in this table.

TABLE 4.19

FORECAST
OF
RENEWAL AND MAINTENANCE OPERATIONS

for the five-year term
from __________ to __________

______________________________ MU/FOREST

	AREA (Ha)			
	RECENT CUTOVER	B&S & NSR	STANDS	TOTAL
RENEWAL				
UNEVEN-AGED MANAGEMENT				
Selection Cut - Harvest				
- Improvement				
TOTAL UNEVEN-AGED				
EVEN-AGED MANAGEMENT				
NATURAL REGENERATION				
Clear Cut				
Strip Cut				
Seed Tree Cut				
Shelterwood Cut - Uniform				
- Strips				
SUB-TOTAL NATURAL				
ARTIFICIAL REGENERATION				
Planting - Bareroot (Ha)				
(000's) Trees				
- Container (Ha)				
(000's) Trees				
- Cuttings (Ha)				
(000's) Trees				
Total Planting (Ha)				
(000's) Trees				
Seeding - Direct (Ha)				
- With Site Prep.				
Scarification				
SUB-TOTAL ARTIFICIAL				
TOTAL EVEN-AGED				
TOTAL RENEWAL				
RETREATMENT - Planting (Ha)				
(000's) Trees				
- Seeding				
SITE PREPARATION				
Mechanical				
Chemical				
Prescribed Burn				
TOTAL SITE PREPARATION				
MAINTENANCE				
TENDING				
Cleaning - Manual				
- Chemical - Ground				
- Aerial				
- Mechanical				
Thinning and Improvement				
Pruning				
Fertilization and Cultivation				
Drainage				
TOTAL TENDING				
PROTECTION				
PEST CONTROL - Ground				
- Aerial				
TOTAL PROTECTION				

INSTRUCTIONS

TABLE 4.19

FORECAST OF RENEWAL AND MAINTENANCE OPERATIONS

Complete this table for renewal and maintenance operations which are planned for the five-year term and include in the Timber Management Plan.

Include any MNR phase-in work that is planned to be carried out on an FMA forest.

1. RENEWAL:

Uneven-aged Management: Area is reported only once in a cutting cycle as selection cut harvest. Any other treatments of any kind are reported as selection cut improvement.

Selection Cut:

Harvest: is the removal of trees either as scattered individuals or in small groups at relatively short intervals and repeated indefinitely. The objective is representation of all size classes distributed throughout stand. The associated area is reported after cutting has occurred and only once in a cutting cycle.

Improvement: includes the improvement of uneven-aged stands whether of a non-commercial or commercial nature.

Even-aged Management:

Natural Regeneration:

Clear Cut: Clear cutting is the removal of the entire growth in one operation from an area wider than five chains. This planned silvicultural clear cut is a regeneration treatment in itself and is commonly associated with the poplar or maple WGs.

Strip Cut: Strip clear cuts or blocks which are less than five chains in width. Only the net area is recorded and reported at the time of the cut. If site preparation is required to complete the prescription, it is reported as site preparation when the operation is conducted.

Seed Tree Cut: Seed tree cut is the operation where trees are left either singly or in groups for seed dispersal. Normally, there would be no harvest of these seed trees. The total area is reported at the time of the cut. If site preparation is required to complete the prescription, it is reported as site preparation when that operation is conducted.

Uniform Shelterwood Cut: The seeding cut where the cutting occurs uniformly across the stand. The total area of the cut stand is reported at the time of the seeding cut.

Artificial Regeneration:

Planting Bare Root: Enter area in hectares and number of trees in thousands. Enter same for Container and Cuttings. Currently the planting of cuttings is limited to non-rooted poplar and willow species.

Seeding: Direct or with site preparation, including the use of the Bracke seeder and seed barrels.

Scarification: Applies exclusively to regeneration of recently harvested jack pine cutovers. By definition it is the only treatment the area receives.

2. RETREATMENT: Includes the planting or seeding of areas which were previously recorded as renewal treatments and have not reached desired stocking.

3. SITE PREPARATION: Do not include chemical applications in conjunction with planting.

4. MAINTENANCE:

Tending: Cleaning, thinning and improvement, pruning, fertilization and cultivation, and drainage.

Protection: The application of pesticides normally will not be forecast on a five-year basis but is scheduled annually and reported annually and in the five-year report.

5. RECENT CUTOVER: Enter area of renewal and maintenance by all of the appropriate categories that is planned to be applied to area which will be harvested during the term of the plan.

6. B&S and NSR: Enter the area that is planned for treatment under the various renewal and maintenance categories on barren and scattered land (applies to company and Crown MUs) and NSR land (applies to FMA forests or units with an NSR survey).

7. STANDS: Enter the area on which renewal and maintenance operations are planned to be carried out in growing or mature production forest stands.

8. TOTAL: Total all rows and columns and subtotals as indicated.

4.12 Support Requirements

4.12.1 Tree Improvement Support

The forecast of tree improvement support operations which will be carried out during the five-year term of the plan is included in this section. The text should make reference to any seed orchard management plans or strategies to which this is related.

The table which is required in this section of the Timber Management Plan is:

Table 4.20	FORECAST OF TREE IMPROVEMENT SUPPORT This table presents the forecast of operations for tree improvement support, by species.

TABLE 4.20

FORECAST
OF
TREE IMPROVEMENT SUPPORT

for the five-year term
from ________ to ________

________________________ MU/FOREST

TREE IMPROVEMENT CATEGORIES	UNITS	SPECIES				TOTAL
Plus Tree Selection	Trees					
Cone Collection	Hl					
Seed Production Areas						
Established	Ha					
Maintained	Ha					
Seed Collection Areas						
Established	Ha					
Maintained	Ha					
Seed Orchards						
Established	Ha					
Maintained	Ha					

INSTRUCTIONS

TABLE 4.20

FORECAST OF TREE IMPROVEMENT SUPPORT

Complete this table for tree improvement support operations which are planned for the five-year term and include in the Timber Management Plan.

TREE IMPROVEMENT CATEGORIES:

1. Plus Tree Selection: Enter number of plus trees by species that are planned to be selected during the term.

2. Cone Collection: Enter the quantity of cones (hectolitres, by species) that are planned (required) to be collected during the term.

3. Seed Production Areas:
   Established: Enter any new area (hectares, by species) that is planned to be designated as seed production area during the term.
   Maintained: Enter the area (hectares, by species) of seed production area on which improvement (maintenance) work is planned during the term.

4. Seed Collection Areas:
   Established: Enter any new area (hectares, by species) that is planned to be designated as a seed collection area during the term.
   Maintained: Enter the area (hectares, by species) of seed collection area on which improvement (maintenance) work is planned during the term.

5. Seed Orchards:
   Established: Enter any new area (hectares, by species) that is planned to be designated as a seed orchard during the term.
   Maintained: Enter the area (hectares, by species) of seed orchard on which improvement (maintenance) work is planned during the term.

6. Enter the total for all species for each category of tree improvement.

4.12.2 Physical Improvements

Physical improvements include the establishment of temporary and long-term camps and their supporting requirements, i.e., airstrips, fencing, fire guards, drainage, etc. For each project, the standards, proposed time period of use, and the method of removal are to be given. The locations of these improvements must be shown on the allocation for renewal and maintenance map in the appendix.

4.13 Access Plan

This section of the Timber Management Plan gives the length and location of access-road construction and maintenance for the five-year term of the plan.

The table which is required in this section of the plan is:

Table 4.21 FORECAST OF ACCESS ROAD CONSTRUCTION AND MAINTENANCE

This table summarizes, by road, the length of primary- and secondary-road construction or reconstruction and road maintenance.

In addition, maps, which are included as appendices to the plan, must show:

- the precise locations (i.e., maximum 100 m corridor width) for primary or secondary roads within specific areas of concern;
- specific locations (i.e., maximum 500 m corridor width) for primary or secondary roads in normal operating areas (i.e., outside areas of concern);
- general locations (i.e., maximum 100 m corridor width) for primary roads required to access the areas which are eligible for allocation during the twenty-year period of the plan; and
- areas which are allocated in which tertiary roads will not be permitted or where special practices, specific seasons of use, immediate removal, or use control will be required.

Strategies for use, management, non-maintenance, or abandonment must also be presented in this section.

TABLE 4.21

FORECAST
OF
ACCESS ROAD CONSTRUCTION AND MAINTENANCE

for the five-year term
from __________ to __________

________________________________ MU/FOREST

NAME OF ROAD	ROAD LENGTH (in kilometres)		
	Construction & Reconstruction		Maintenance
	Primary	Secondary	
TOTAL			

INSTRUCTIONS

TABLE 4.21

FORECAST OF ACCESS ROAD CONSTRUCTION AND MAINTENANCE

Complete this table for all access road construction and maintenance operations which are planned for the five-year term and include in the Timber Management Plan.

1. NAME OF ROAD: List roads by name or number which are planned for construction, reconstruction, or maintenance during the five-year term.

2. ROAD LENGTH: Enter for each road name or number the length (kilometres) that is planned for:
   a) Construction and/or reconstruction by primary or secondary standard during the term;
   or b) maintenance during the term.

3. Enter the column totals for Primary, Secondary, and Maintenance to provide the total kilometres for the MU/Forest.

4.14 Free-to-Grow Assessment

A forecast of the areas which will be assessed for free-to-grow (FTG) status is included in this section.

The table which is required in this section of the Timber Management Plan is:

Table 4.22	FORECAST OF FTG ASSESSMENT This table shows the area of FTG assessment which will be carried out during the five-year term of the plan.

TABLE 4.22

FORECAST
OF
FTG ASSESSMENT

for the five-year term
from __________ to __________

__________________________________ MU/FOREST

WG/FU	AREA (Ha)
Treated	
Subtotal	
Untreated	
Subtotal	
TOTAL	

INSTRUCTIONS

TABLE 4.22

FORECAST OF FTG ASSESSMENT

Complete this table for the area of free-to-grow (FTG) which is planned for the five-year term and include in the Timber Management Plan.

Regeneration success will be determined by a FTG survey of regenerating areas. These surveys are carried out on both Crown and company MUs and management agreement forests.

1. TREATED: Enter the area in hectares by WG/FU of previous renewal treatments that is planned for a FTG assessment during the five-year term.
2. UNTREATED: Enter the area in hectares by WG/FU of unassisted regeneration that is planned for FTG assessment during the five-year term.
3. TOTAL: Enter the total of Treated plus Untreated to indicate the total area of FTG assessment planned (FORECAST) for the unit during the five-year term.

4.15 Appendices and Supplementary Documentation

The following two sections outline the required appendices and supplementary documentation for a Timber Management Plan. The appendices form part of the plan and as such must remain with it at all times. However, the supplementary documentation must accompany the plan through the review process but does not form part of the plan and therefore will not be available with every copy.

4.15.1 Appendices

The following items must be included as appendices to a Timber Management Plan:

- copies of tables 4.1 to 4.7 from the report on past operations for the three previous five-year terms;
- copies of tables 4.8.1, 4.8.2, and 4.9 from the forest description for the previous five-year term;
- detailed MAD calculations for each working group or forest unit;
- FRI composite maps indicating areas eligible for allocation for depletion and preliminary identification of areas of concern;
- FRI composite maps indicating areas eligible for allocation for renewal and maintenance operations and preliminary identification of areas of concern;
- FRI mapsheets or composites indicating areas allocated for depletion; areas of normal operations, modified operations and reserves; and those areas included in the declared surplus;
- a listing of stands allocated for depletion, showing the total area allocated, the area allocated for normal operations and the associated prescription, the area allocated for modified operations and the associated prescription, and the area allocated as reserve (NOTE: The prescriptions indicated in the stand listings may be specific prescriptions developed for each individual stand or they may be references to generic prescriptions as included in the silvicultural ground rules for normal or modified operations — Tables 4.11 and 4.12 — as shown in Section 4.9 "Silvicultural Ground Rules" of the plan);
- a summary of the public consultation process, including the information detailed in Section 2.6 "Plan Review" of this manual; and
- a description of the methodology for any operational surveys which have been conducted to determine prescriptions or the relationship of volume by species to working group or forest unit.

4.15.2 Supplementary Documentation

The following information must be included as supplementary documentation which accompanies the two copies of the plan when submitted:

- records of public consultation in the planning process, including dates and copies or details of public notices, public review periods, and public submissions and concerns;
- documentation of the planning procedure for forest access roads in the determination of primary-road corridors for the twenty-year period of the plan and more specific locations for the five-year term. This documentation must include an identification of the alternatives considered, the environmental evaluation and comparison of the alternatives, and how public submissions or concerns were considered in the choice of the preferred or most acceptable location; and
- documentation of the planning procedure for harvest renewal and maintenance operations in the determination of the requirement for modified operations or reserves in specific areas of concern. This documentation must include an identification of the alternatives considered, the environmental evaluation and comparison of the alternatives, and how public submissions or concerns were considered in the choice of the preferred or most acceptable manner of operation.

5.0 ANNUAL WORK SCHEDULE

An Annual Work Schedule (AWS) is required for each twelve-month period, commencing on the first day of April. This schedule lists the operations that have been included in the Timber Management Plan which will be carried out during the year involved.

Since the Annual Work Schedule only indicates the year in which the operations will take place and does not include any new decisions not already documented in previous planning exercises, it is not considered to be a planning document. Therefore, the Annual Work Schedule does not require public consultation during its production and review. Instead, the schedule is subject to MNR internal review and, after approval, public inspection.

The direct responsibility to prepare Annual Work Schedules rests with the Crown for Crown management units and with the company, with input from the MNR, for company management units and FMA forests. This responsibility would normally fall to the management unit forester on a Crown unit and the company forester for a company unit or FMA forest.

Annual Work Schedules, primarily indicating areas scheduled for harvest or forecast road-access work, may also be required from companies operating within Crown management units (e.g., order-in-council licensees). This information is required to aid the management unit forester in the preparation of a complete schedule for the unit. In these cases, the requirements and timing must be negotiated with the company involved and adapted to suit the specific needs.

The part which Annual Work Schedules play in MNR's work-program planning and budget-allocation process may vary from region to region and from district to district within a particular region. Therefore, although the schedule must be submitted at least two months prior to April 1, requirements for more advanced submission may be instituted, based on local needs. The need for earlier submission will primarily depend upon the role which the Annual Work Schedule from an individual Crown management unit, or all units in a district, plays in the allocation of funds within the district work program.

For FMA forests the Annual Work Schedule must be submitted no later than November 30 as required by the section of the agreement dealing with annual plans.

Finally, the Annual Work Schedule from an individual unit or for all units in a district should be in line with the work funded by either the unit or district allocation, whichever is relevant.

5.1 Annual Work Schedule Requirements

This section outlines the minimum requirements for an acceptable Annual Work Schedule for Crown forests in Ontario.

As was the case for the Timber Management Plan, this manual may not include as requirements those items which may be necessary for a specific locality. As a result, certain regions or districts may add specific requirements for Annual Work Schedules prepared within their administrative areas. The additional requirements, however, must be negotiated where the responsibility for providing an Annual Work Schedule rests with a company.

5.1.1 Title and Approval Page

The Annual Work Schedule must begin with a title and approval page in the format shown in Figure 5.1. This page serves to identify the schedule and indicates its approval.

The title and approval page must be signed by the person who prepared the document and, when prepared by a company, by a senior company official. A space must be provided for the district manager's signature when the Annual Work Schedule is approved.

FIGURE 5.1
ANNUAL WORK SCHEDULE
TITLE AND APPROVAL PAGE

ANNUAL WORK SCHEDULE
for the

[NAME OF MANAGEMENT UNIT OR FOREST]

[Administrative District and Region
Company Name, Licence, or FMA Number (where applicable)]

for the
one-year period

from April 1, ____ to March 31, ____

Prepared by: ______________________ __________

Submitted by: ______________________ __________
(where applicable) [Senior Company Official] (date)

I have read this Annual Work Schedule and found it satisfactory and consistent with the Timber Management Plan.

Approved by: ______________________ __________
(District Manager) (date)

[NOTE: Names must be signed as well as typed and, where appropriate, titles should be given.]

5.1.2 Introduction

An introduction, giving the name of the management unit or forest, the company name and licence or FMA number where applicable, the administrative district and region, and the period of the schedule must be provided.

A key map, with an appropriate legend, is required at a scale which will fit on a standard text page. The map must show the appropriate districts and regions, their names and headquarters, and the management unit or forest. Where applicable, the location of the company office should be indicated.

The Annual Work Schedule serves as a basis for the issuance of cutting approvals required under the Crown Timber Act.

5.1.3 Depletion Area

Stands which have been selected for depletion during the period of the schedule are summarized in this section. In addition, a listing of the stands which have been selected must be included in the appendices together with FRI mapsheets or composites indicating their location.

Should the annual area scheduled for depletion not be in approximate agreement with average annual rate of depletion for a working group or forest unit for the five-year term, the text should include an explanation.

The area which is allocated for harvest depletion is also assigned to each licensee type (e.g., DCL, tendered sale) in this section.

The tables required in this section of the Annual Work Schedule are:

Table 5.1	ANNUAL SCHEDULE OF DEPLETION AREA This table summarizes the depletion area, by working group or forest unit and age class, under the categories of normal and modified harvest or reserve.
Table 5.2	ANNUAL SCHEDULE OF HARVEST AREA BY LICENSEE This table summarizes the harvest area for each licensee (or licence type), by working group or forest unit.

The basis for information included in this section of the Annual Work Schedule is found in sections 4.11.1.3 "Allocation for Depletion" and 4.11.1.4 "Disposition of Allocated Area" in the Timber Management Plan.

TABLE 5.1

ANNUAL SCHEDULE OF DEPLETION BY AREA

April 1, _____ to March 31, _____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

______________________________ MU/FOREST

WG/FU	AGE CLASS	DEPLETION AREA (Ha)				
		HARVEST			RESERVE	TOTAL
		NORMAL	MODIFIED	SUBTOTAL		
TOTAL						

INSTRUCTIONS

TABLE 5.1

ANNUAL SCHEDULE OF DEPLETION BY AREA

Complete and include as part of the annual work schedule (AWS). Indicate the year to which the schedule pertains by circling the appropriate number in the title (i.e., 1, 2, 3, 4, 5).

1. DEPLETION AREA: Enter the area that is scheduled for depletion during the year by WG/FU and five-year age class for each of the categories HARVEST (Normal & Modified) and RESERVE. Complete subtotals and total.
2. WG/FU: Enter the Working Group/Forest Unit.
3. AGE CLASS: For even-age management, enter five-year age classes for which there is depletion scheduled. No age is required for selection system.
4. HARVEST: Normal - Enter area scheduled for depletion by harvest operations to be carried out according to the prescriptions for normal forest operations.
   Modified - Enter area scheduled for depletion by harvest operations to be carried out according to the prescriptions for modified operations.
5. RESERVE: Enter area for which harvest operations are not permitted in allocated stands during the year term according to the prescriptions for modified operations.
6. Enter WG/FU totals and total for MU/Forest.
7. Enter all area figures in hectares. Conversion: 1 hectare = 2.471 acres
   1 acre = 0.405 hectares

SUBMISSION: AWS submission date is NOVEMBER 30th of each year for FMA and January 31st for Crown and company units. Prime licensees and agreement holders (FMA) submit AWSs to the controlling MNR district office (district manager) for all operations which are scheduled to occur on the MU/Forest. Crown Unit managers submit AWSs to their district manager for all activities which are scheduled to occur on the MU.

TABLE 5.2

ANNUAL SCHEDULE OF HARVEST AREA DEPLETION BY LICENSEE

April 1, _____ to March 31, _____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

________________________________ MU/FOREST

CONSUMER(S) (By Licensee)	HARVEST AREA (Ha)	
	WG/FU	TOTAL
TOTAL HARVEST		

INSTRUCTIONS

TABLE 5.2

ANNUAL SCHEDULE OF HARVEST AREA DEPLETION BY LICENSEE

Complete and include as part of the annual work schedule (AWS). Complete for harvest area depletion by licensee which is scheduled for the year. Indicate the year to which the schedule pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5).

1. CONSUMER(s): List all licensees, including third party and Order in Council and District Cutting Licences, that are scheduled to harvest timber from the MU/Forest during the term. Licensees for some methods of disposal may be grouped (e.g., DCLs and Tender Sales).
   Types of licensees:
   - O.C. - Order in Council
   - DCL - District Cutting Licence
   - Sale By Tender
   - Salvage
   - FMA - Forest Management Agreement
   - TSA - Timber Sales Agreement

2. HARVEST: Enter the area by WG/FU in hectares for each licensee that is scheduled for the year. This is the annual portion of the forecast area from Table 4.16 .

3. TOTAL: Enter row totals to indicate the total by licensee and column totals to provide the total area scheduled for harvest by WG/FU for the MU/Forest.

4. Enter area in hectares. Conversion: 1 hectare = 2.471 acres
   1 acre = 0.405 hectares

SUBMISSION: AWS submission date is NOVEMBER 30th of each year for FMA and January 31st for Crown and company units. Prime licensees and agreement holders (FMA) submit AWSs to the controlling MNR district office (district manager) for all operations which are scheduled to occur on the MU/Forest. Crown unit managers submit AWSs to their district manager for all activities which are scheduled to occur on the MU.

5.1.4 Wood Utilization

In this section the estimate of wood utilization from the management unit or forest is shown by licensee.

The table which is required in this section of the schedule is:

Table 5.3	ANNUAL SCHEDULE OF WOOD UTILIZATION This table gives the volume depletion scheduled, by species, for each licensee or licence type.

The basis for information in this section of the Annual Work Schedule is found in Section 4.11.1.5 "Wood Utilization" of the Timber Management Plan.

TABLE 5.3

ANNUAL SCHEDULE OF WOOD UTILIZATION BY LICENSEE

April 1, _____ to March 31, _____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

________________________ MU/FOREST

CONSUMER(S) (By Licensee)	VOLUME (NMm ^{3}) BY SPECIES				
	CONIFER		HARDWOOD		TOTAL
		Subtotal		Subtotal	
TOTAL					

INSTRUCTIONS

TABLE 5.3

ANNUAL SCHEDULE OF WOOD UTILIZATION BY LICENSEE

This table presents the annual schedule of species volume to be harvested, by licensee, which is a portion of the volume forecasted for the five-year term in Table 4.18.1 .

Complete and include as part of the annual work schedule (AWS).

1. CONSUMER(S): List all licensees, including third party and Order in Council and District Cutting Licences, that are scheduled to harvest timber from the MU/Forest during the year. Licensees for some methods of disposal may be grouped (e.g., DCLs and Tender Sales).

   Types of licensees:

   O.C. - Order in Council
   DCL - District Cutting Licence
   Sale By Tender
   Salvage
   FMA - Forest Management Agreement
   TSA - Timber Sale Agreement

   Normally, the list of licensees should be the same as those in Table 4.16 and 4.18.1 .

2. VOLUME: Source--> Operational stand volumes by species, from the stand listings, totalled by licensee for the year . Enter volume by species of scheduled harvest by licensee in net merchantable cubic metres (NMm^3). Subtotal by conifer and hardwood and enter row totals for all species by licensee in TOTAL VOLUME.

3. TOTAL: Enter column totals for species.

4. Enter volume in cubic metres.Conversion:

   1 cunit = 2.8317 cubic metres (m^3)
   1 cord = 2.4069 cubic metres (m^3)
   1 cubic metre (m^3) = 35.3147 cubic feet

SUBMISSION: AWS submission date is NOVEMBER 30th of each year for FMA and JANUARY 31st for Crown and company units. Prime licensees and agreement holders (FMA) submit AWSs to the controlling MNR district office (district manager) for all operations which are scheduled to occur on the MU/Forest. Crown unit managers submit AWSs to the district manager for all activities which are scheduled to occur on the MU.

5.1.5 Renewal and Maintenance

Stands or areas which have been selected for renewal or maintenance operations during the period of the schedule are summarized in this section. The results of the annual planning process for protection operations is also recorded in this section of the Annual Work Schedule. In addition, a listing of the stands or areas which have been selected must be included in the appendices together with FRI mapsheets or composites indicating their location.

Should the annual area scheduled for renewal or maintenance not be in approximate agreement with the average annual rate of operations for the five-year term, the text should include an explanation.

The table which is required in this section of the Annual Work Schedule is:

Table 5.4 ANNUAL SCHEDULE OF RENEWAL AND MAINTENANCE OPERATIONS

This table summarizes the renewal and maintenance operations which are scheduled for recent cutover, B+S or NSR, and existing stands.

The basis for information included in this section of the Annual Work Schedule, with the possible exception of protective operations, is found in Section 4.11.2.3 "Allocation for Renewal and Maintenance" in the Timber Management Plan.

TABLE 5.4

ANNUAL SCHEDULE
OF
RENEWAL AND MAINTENANCE OPERATIONS

April 1, ____ to March 31, ____
Year 1, 2, 3 ,4, 5 (circle one) of the Five-Year Term

________________________________ **MU/FOREST**

	AREA (Ha)			
	RECENT CUTOVER	B&S & NSR	STANDS	TOTAL
RENEWAL				
UNEVEN-AGED MANAGEMENT				
Selection Cut - Harvest				
- Improvement				
TOTAL UNEVEN-AGED				
EVEN-AGED MANAGEMENT				
NATURAL REGENERATION				
Clear Cut				
Strip Cut				
Seed Tree Cut				
Shelterwood Cut - Uniform				
- Strips				
SUB-TOTAL NATURAL				
ARTIFICIAL REGENERATION				
Planting - Bareroot (Ha)				
(000's) Trees				
- Container (Ha)				
(000's) Trees				
- Cuttings (Ha)				
(000's) Trees				
Total Planting (Ha)				
(000's) Trees				
Seeding - Direct (Ha)				
- With Site Prep.				
Scarification				
SUB-TOTAL ARTIFICIAL				
TOTAL EVEN-AGED				
TOTAL RENEWAL				
RETREATMENT - Planting (Ha)				
(000's) Trees				
- Seeding				
SITE PREPARATION				
Mechanical				
Chemical				
Prescribed Burn				
TOTAL SITE PREPARATION				
MAINTENANCE				
TENDING				
Cleaning - Manual				
- Chemical - Ground				
- Aerial				
- Mechanical				
Thinning and Improvement				
Pruning				
Fertilization and Cultivation				
Drainage				
TOTAL TENDING				
PROTECTION				
PEST CONTROL - Ground				
- Aerial				
TOTAL PROTECTION				

INSTRUCTIONS

TABLE 5.4

ANNUAL SCHEDULE OF RENEWAL AND MAINTENANCE OPERATIONS

Complete and include as part of the annual work schedule (AWS). Complete for renewal and maintenance operations which are scheduled for the year. Indicate the year to which the schedule pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5).

1. RENEWAL:

Uneven-aged Management: Area is reported only once in a cutting cycle as selection cut harvest. Any other treatments of any kind are reported as selection cut improvement.

Selection Cut:

Harvest: is the removal of trees either as scattered individuals or in small groups at relatively short intervals and repeated indefinitely. The objective is representation of all size classes distributed throughout stand. The associated area is reported after cutting has occurred and only once in a cutting cycle.

Improvement: includes the improvement of uneven-aged stands whether of a non-commercial or commercial nature.

Even-aged Management:

Natural Regeneration:

Clear Cut: Clear cutting is the removal of the entire growth in one operation from an area wider than five chains. This planned silvicultural clear cut is a regeneration treatment in itself and is commonly associated with the poplar or maple WGs.

Strip Cut: Strip clear cuts or blocks which are less than five chains in width. Only the net area is recorded and reported at the time of the cut. If site preparation is required to complete the prescription, it is reported as site preparation when the operation is conducted.

Seed Tree Cut: Seed tree cut is the operation where trees are left either singly or in groups for seed dispersal. Normally, there would be no harvest of these seed trees. The total area is reported at the time of the cut. If site preparation is required to complete the prescription, it is reported as site preparation when that operation is conducted.

Uniform Shelterwood Cut: The seeding cut where the cutting occurs uniformly across the stand. The total area of the cut stand is reported at the time of the seeding cut.

Artificial Regeneration:

Planting Bare Root: Enter area in hectares and number of trees in thousands. Enter same for Container and Cuttings. Currently the planting of cuttings is limited to non-rooted poplar and willow species.

Seeding: Direct or with site preparation, including the use of the Bracke seeder and seed barrels.

Scarification: Applies exclusively to regeneration of recently harvested jack pine cutovers. By definition it is the only treatment the area receives.

2. RETREATMENT: Includes the planting or seeding of areas which were previously recorded as renewal treatments and have not reached desired stocking.

3. SITE PREPARATION: Do not include chemical applications in conjunction with planting.

4. MAINTENANCE:

Tending: Cleaning, thinning and improvement, pruning, fertilization and cultivation, and drainage.

Protection: The application of pesticides normally will not be forecast on a five-year basis but is scheduled annually and reported annually and in the five-year report.

SUBMISSION: AWS submission date is NOVEMBER 30th of each year for FMA and JANUARY 31st for Crown and company units. Prime licensees and agreement holders (FMA) submit AWSs to the controlling MNR district office (district manager) for all operations which are scheduled to occur on the MU/Forest. Crown unit managers submit AWSs to their district manager for all activities which are scheduled to occur on the MU.

5.1.6 Support Requirements

The basis for information included in this section is found in Section 4.12 "Support Requirements" in the Timber Management Plan.

5.1.6.1 Tree Improvement Support

The tree improvement support operations which are scheduled are included in this section.

The table which is required in this section of the Annual Work Schedule is:

Table 5.5 ANNUAL SCHEDULE OF TREE IMPROVEMENT SUPPORT
This table presents the schedule of operations for tree improvement support, by species.

TABLE 5.5

ANNUAL SCHEDULE
OF
TREE IMPROVEMENT SUPPORT

for the year April 1, _____ to March 31, _____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

______________________________ MU/FOREST

TREE IMPROVEMENT CATEGORIES	UNITS	SPECIES				TOTAL
Plus Tree Selection	Trees					
Cone Collection	Hl					
Seed Production Areas						
Established	Ha					
Maintained	Ha					
Seed Collection Areas						
Established	Ha					
Maintained	Ha					
Seed Orchards						
Established	Ha					
Maintained	Ha					

INSTRUCTIONS

TABLE 5.5

ANNUAL SCHEDULE OF TREE IMPROVEMENT SUPPORT

Complete and include as part of the annual work schedule (AWS).

Complete for tree improvement support operations which are scheduled for the year. Indicate the year to which the schedule pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5).

Enter the quantity (by species) for each category that is scheduled for the year from that contained in Table 4.20 (Forecast of Tree Improvement Support).

SUBMISSION: AWS submission date is NOVEMBER 30th of each year for FMA and JANUARY 31st for Crown and company units. Prime licensees and agreement holders (FMA) submit AWSs to the controlling MNR district office (district manager) for all operations which are scheduled to occur on the MU/Forest. Crown unit managers submit AWSs to their district manager for all activities which are scheduled to occur on the MU.

5.1.6.2 Physical Improvements

Physical improvements which are scheduled must be indicated in this section. The basis for information included in this section is found in Section 4.12.2 "Physical Improvements" in the Timber Management Plan. The locations of these improvements must be shown on the allocation for renewal and maintenance map in the appendices.

5.1.7 Access Plan

This section of the Annual Work Schedule gives the length and location of access-road construction and maintenance which is scheduled.

The table which is required in this section of the Annual Work Schedule is:

Table 5.6 ANNUAL SCHEDULE OF ACCESS ROAD CONSTRUCTION AND MAINTENANCE

This table summarizes, by road, the length of primary- and secondary-road construction or maintenance which is scheduled.

In addition, maps which are included as appendices to the Annual Work Schedule must show:

- precise locations (i.e., maximum 100 m corridor width) for primary or secondary roads within specific areas of concern;
- specific locations (i.e., maximum 500 m corridor width) for primary or secondary roads in normal capacity areas (i.e., outside of areas of concern); and
- areas which are allocated in which tertiary roads will not be permitted or where special practices, specific seasons of use, immediate removal, or use control will be required.

The requirements for use management, non-maintenance, or abandonment must be indicated for each road.

The basis for information included in this section is found in Section 4.13 "Access Plan" of the Timber Management Plan.

TABLE 5.6

ANNUAL SCHEDULE
OF
ACCESS ROAD CONSTRUCTION AND MAINTENANCE

April 1, ____ to March 31, ____
Year 1, 2, 3 ,4, 5 (circle one) of the Five-Year Term

________________________________ MU/FOREST

NAME OF ROAD	ROAD LENGTH (in kilometres)		
	Construction & Reconstruction		Maintenance
	Primary	Secondary	
TOTAL			

INSTRUCTIONS

TABLE 5.6

ANNUAL SCHEDULE OF ACCESS ROAD CONSTRUCTION AND MAINTENANCE

Complete and include as part of the annual work schedule (AWS).

Complete for access road construction and maintenance operations which are scheduled for the year. Indicate the year to which the schedule pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5).

1. NAME OF ROAD: List the roads by name or number which are scheduled for construction or maintenance during the year from those contained in Table 4.21 (Forecast of Access Road Construction and Maintenance)
2. Construction and Reconstruction: Enter the kilometres of road that are scheduled to be constructed or reconstructed, indicating whether Primary or Secondary standard.
3. MAINTENANCE: Enter the kilometres by road name or number that are scheduled for maintenance during the year.
4. TOTAL: Enter column totals to indicate the total for each category providing a total for the MU/Forest.

SUBMISSION: AWS submission date is NOVEMBER 30th of each year for FMA and JANUARY 31st for Crown and company units. Prime licensees and agreement holders (FMA) submit AWSs to the controlling MNR district office (district manager) for all operations which are scheduled to occur on the MU/Forest. Crown unit managers submit AWSs to their district manager for all activities which are scheduled to occur on the MU.

5.1.8 Free-to-Grow Assessment

The schedule of the areas which require free-to-grow (FTG) assessment is included in this section.

The table which is required in this section of the Annual Work Schedule is:

Table 5.7	ANNUAL SCHEDULE OF FTG ASSESSMENT This table shows the area of FTG assessment which is scheduled.

Although the FTG assessment requirements are forecast in the Timber Management Plan, the main basis for the information in this section will be stocking assessments which identify areas as requiring FTG assessment or verification of FTG status.

TABLE 5.7

ANNUAL SCHEDULE OF FTG ASSESSMENT

April 1, ____ to March 31, ____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

________________________________ MU/FOREST

WG/FU	AREA (Ha)
Treated	
Subtotal	
Untreated	
Subtotal	
TOTAL	

INSTRUCTIONS

TABLE 5.7

ANNUAL SCHEDULE OF FTG ASSESSMENT

Complete and include as part of the annual work schedule (AWS).

Complete for FTG assessment operations which are scheduled for the year. Indicate the year to which the schedule pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5).

1. TREATED: Enter the area in hectares by WG/FU of previous renewal treatments that is scheduled for FTG assessment during the year.
2. UNTREATED: Enter the area in hectares by WG/FU of unassisted regeneration that is scheduled for FTG assessment during the year.
3. TOTAL: Enter the total of Treated plus Untreated to indicate the area scheduled for FTG assessment for the MU/Forest during the year.

SUBMISSION: AWS submission date is NOVEMBER 30th of each year for FMA and JANUARY 31st for Crown and company units. Prime licensees and agreement holders (FMA) submit AWSs to the controlling MNR district office (district manager) for all operations which are scheduled to occur on the MU/Forest. Crown unit managers submit AWSs to their district manager for all activities which are scheduled to occur on the MU.

5.1.9 Appendices

The following appendices, as have been previously indicated, are required in an Annual Work Schedule:

- list of stands scheduled for depletion;
- FRI mapsheets or composites indicating stands scheduled for depletion;
- list of stands or areas scheduled for renewal or maintenance operations;
- FRI mapsheets or composites indicating stands or areas scheduled for renewal or maintenance operations; and
- maps of primary and secondary roads which are scheduled for construction also indicating areas where tertiary roads are not permitted.

5.2 Annual Work Schedule Submission and Review

The draft Annual Work Schedule for FMA forests must be submitted to the district manager for review and approval at least four months prior to the term of its application (normally a twelve-month period commencing on the first day of April of each year). Crown or company management unit Annual Work Schedules must be submitted at least two months prior to the term of their application.

The only internal review of the Annual Work Schedule takes place upon submission, at which time the MNR district will undertake an internal review over a period of thirty days. This review could be favourable, recommending approval of the draft as submitted, or unfavourable, culminating in a list of required alterations and the reasons for them, directed from the district manager to the district's timber supervisor or to the company.

If alterations are required, a thirty-day period is allotted for the production of a revised Annual Work Schedule which is submitted for approval. The MNR district will undertake an immediate internal review to ensure that the required alterations have been made.

If no alterations were required or if the required alterations have been satisfactorily incorporated, the Annual Work Schedule will be approved by the district manager.

5.3 Inspection of the Approved Annual Work Schedule

The Annual Work Schedule serves to schedule operations which have been included in the Timber Management Plan, for a specific one-year period. Since public consultation has been conducted during the preparation of the Timber Management Plan it is not necessary to repeat it during the preparation of the Annual Work Schedule. However, upon approval of the Annual Work Schedule, the district manager will issue a public notice advising all interested participants that the approved Annual Work Schedule is available for inspection at the MNR district office. This public notice will be issued in the form of direct written notices to all parties and individuals potentially affected by the operations which will be carried out during the term of the Annual Work Schedule. Paid advertisements in the local media advising the public of the opportunity for inspection of the approved Annual Work Schedule will also be issued.

The approved Annual Work Schedule will remain available for inspection at the district office for its one-year duration.

Additional public notices of operations may be issued by the district manager. This is particularly necessary where the public must be notified of prescribed burns or herbicide applications which could pose a safety hazard.

5.4 Amendments to the Annual Work Schedule

Amendments to the Annual Work Schedule may be approved by the district manager provided they are consistent with the intent of the management plan. Substitutions of areas that were not allocated for depletion in the first five-year term of the management plan are not permitted without an amendment to the management plan.

The amendment and documentation are added to the work schedule.

6.0 ANNUAL REPORT REQUIREMENTS

A twenty-year Timber Management Plan is renewed each five years for another twenty-year term. This maintains the long-term continuity of the plan and provides the flexibility to meet changing conditions and needs. Plans may also have to be amended or even renewed before the regular renewal time owing to significant changes in conditions.

Records must be maintained and analysed, and operations must be assessed. This on-going evaluation, along with new forecasts, provides the information needed for each renewal of a twenty-year management plan.

Annual reports of past forest operations must be submitted for statistical and analytical purposes to aid in fulfilling the MNR's overall responsibility for the management of Crown land. Annual reports are not part of the management plan.

Each manager must record and report the results of the following operational activities:

- depletion of the forest;
- wood utilization;
- renewal and maintenance;
- tree improvement support;
- access development; and
- assessment of the new forest.

All reports except those for depletion and wood utilization are due on April 10 for the operations conducted during the preceding year. The reports of depletion and wood utilization are due on November 15 to allow time for supplementary aerial photography or mapping and final compilation of scaling returns. Responsibility for records and reporting rests with the management forester for Crown management units and with the company, with input from the MNR, for company management units and FMAs.

Reports must be submitted to the manager of the district involved. The district will in turn forward copies of all annual reports to the appropriate regional office and to the Director, Timber Sales Branch, Forest Resources Group, Main Office, to update the central management-unit record file.

6.1 Depletion

The annual area depletion is summarized in total, by working group, age class, and depletion type, in Table 6.1 and by working group and licensee in Table 6.2. In some cases licence type (e.g., DCLs) may be grouped. Forest stand maps, at a scale of 1: 15 840, outlining the boundaries of the depleted area must also be submitted with the report tables.

6.2 Wood Utilization

The volume depletion is reported in the format of Table 6.3. This table uses the Timber Sales' scaling and billing system reports as source information. It shows the wood, by species, received by each licensee for the current year to date in the management-plan term and the balance remaining. In some cases, licence types (e.g., DCLs) may be grouped.

Annual area depletions are also recorded, by area and by stand, in stand-depletion listings and are kept on file for auditing and FRI-update purposes.

6.3 Renewal and Maintenance

The requirements for records and reporting renewal and maintenance activities on Crown and company management units are outlined in the OMNR Manual of Instructions for Completing Silvicultural Records (1979). The Silvicultural Information System is available for all management units.

The renewal and maintenance activities are summarized in the format of Table 6.4.1.

The boundaries of the areas treated are outlined on a FRI forest-stand map at a scale of 1: 15 840 and are kept on file for auditing and FRI-update purposes.

For FMAs Table 6.4.2 must be completed showing the renewal and maintenance activities conducted at company cost. In addition Table 6.4.3, which gives a general summary of activities and MNR payments, is required.

6.4 Tree Improvement Support

The tree improvement support is reported annually in the format of Table 6.5.

6.5 Access Development

An annual summary of road construction, reconstructions, and maintenance, in the format of Table 6.6, must be submitted. For FMAs the dollar figures reported will be the amount of subsidy payment received, not total cost.

The location of road construction and reconstruction of primary and secondary roads is shown on a FRI forest-stand map at a scale of 1: 15 840 or on composite maps and is kept on file for auditing.

6.6 Free-to-Grow Assessment

The FTG assessments are to be reported annually in the format of Table 6.7.1. The FTG assessments will be supplied by the MNR. For FMAs Table 6.7.2, which shows the results of company-conducted stocking assessments, is required.

TABLE 6.1

ANNUAL REPORT OF DEPLETION BY AREA

April 1, _____ to March 31, _____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

_______________________ MU/FOREST

		AREA (Ha)											
		CURRENT DEPLETIONS											
		HARVEST			RESERVE	NATURAL							
WG/FU	AGE CLASS	Normal	Modified	Subtotal		Burn	Insect/ Disease	Other	Subtotal	TOTAL	TO DATE	BALANCE	Un-treatable Area (Ha)
TOTAL													

INSTRUCTIONS

TABLE 6.1

ANNUAL REPORT OF DEPLETION BY AREA

A progress report - complete annually. Indicate the year to which the report pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5).

1. WG/FU: Enter the Working Group/Forest Unit.

2. AGE CLASS: For even-age management, enter five-year age classes for which there is depletion. No age is required for selection system.

3. CURRENT DEPLETIONS: Enter the area by WG/FU and age class for each of the depletion categories: HARVEST (Normal & Modified), RESERVE, and NATURAL (Burn, Insect/Disease, Other). Complete subtotals and total as required.

4. HARVEST: Normal - Enter area depleted by harvest operations carried out according to the prescriptions for normal forest operations.
   Modified - Enter area depleted by harvest operations carried out according to the prescriptions for modified operations.

5. RESERVE: Enter area for which harvest operations were not permitted in allocated stands during the year according to the prescriptions for modified operations.

6. NATURAL: Enter area of unplanned depletion of a natural origin.
   BURN - area depleted due to wildfire.
   INSECT/DISEASE - area of forest depleted due to insect infestation or disease where a salvage operation will not occur.
   OTHER - area depleted due to any other natural cause such as: wind, hail, flooding, and natural degradation due to overmaturity. Enter area depletion only once in a cutting cycle.
      E.g., If a stand is damaged by a natural cause and a salvage operation follows to remove the merchantable timber and the stand area depleted has been reported for the year in which the natural depletion occured, do not record again when the salvage occurs. Complete a separate Table 6.1 to record any salvage harvest area when it occurs and include with the report.

7. TO DATE: Enter the cumulative area depleted by WG/FU and age class for the total area depleted to date. Include depletions for previous year(s) plus the current depletions (TOTAL).

8. BALANCE: Enter, by age class and WG/FU, the difference between the area of depletion forecast (Table 4.15) and the cumulative Total TO DATE. This represents the balance remaining to be depleted for the term.

9. When entering WG/FU data, list MAD land base (PFR & Regular) first, enter a subtotal row, and then list any other depletion for that WG/FU (B&S, NSR, and PF categories). Total by WG/FU and for the MU/Forest.

10. UNTREATABLE: Enter the depletion area by WG/FU which has been classified as silviculturally untreatable. This can be derived from a cutover classification system or as a residual of the renewal treatment area. For FMA forests and company MUs, this area is determined by mutual agreement between the company and the MNR.

10. Enter all area figures in hectares. Conversion: 1 hectare = 2.471 acres
    1 acre = 0.405 hectares

SUBMISSION: Forward the completed report annually by NOVEMBER 15th to the MNR district manager responsible for the area. The DM forwards a copy immediately to the regional director and the Director, Timber Sales Branch. The report represents the total depletions for the MU/Forest for the year indicated.

TABLE 6.2

ANNUAL REPORT OF HARVEST AREA DEPLETION BY LICENSEE

April 1, _____ to March 31, _____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

______________________________ MU/FOREST

CONSUMER(S) (By Licensee)	HARVEST AREA (Ha)			
	WG/FU	TOTAL		
		Current	To Date	Balance
TOTAL HARVEST				

INSTRUCTIONS

TABLE 6.2

ANNUAL REPORT OF HARVEST AREA DEPLETION BY LICENSEE

A progress report - complete annually. Indicate the year to which the report pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5).

Complete for harvest area depleted by licensee during the year and compare the total depletion by licensee (Current) with the cumulative total (To Date) and the Balance remaining to be harvested during the term.

1. CONSUMER(s): List all licensees, including third party and Order in Council and District Cutting Licences, that harvested timber from the MU/Forest during the year. Licensees for some methods of disposal may be grouped (e.g., DCLs and Tender Sales).
   Types of licensees:
   O.C. - Order in Council
   DCL - District Cutting Licence
   Sale By Tender
   Salvage
   FMA - Forest Management Agreement
   TSA - Timber Sales Agreement

2. HARVEST: Enter area by WG, for each licensee, that was harvested during the year.

3. TOTAL:

   Current - Enter the total by licensee for all WGs (provides the total harvested by licensee for the year).

   To Date - Enter the cumulative total area harvested by licensee to date. Include the area from previous year(s) in the term plus CURRENT.

   Balance - Enter the difference between the area planned (forecast) to be harvested by licensee (Table 4.16) and the cumulative total to date. This represents the balance remaining for the term.

4. TOTAL: Complete all row totals to provide the totals harvested by WG for the MU/Forest for the year and the balance remaining.

5. Enter area in hectares. Conversion: 1 hectare = 2.471 acres
   1 acre = 0.405 hectares

SUBMISSION: Forward the completed report annually by NOVEMBER 15th to the MNR district manager responsible for the area. The DM forwards a copy immediately to the regional director and the Director , Timber Sales Branch.

TABLE 6.3

ANNUAL REPORT OF WOOD UTILIZATION BY LICENSEE

April 1, _____ to March 31, _____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

______________________________ MU/FOREST

CONSUMER(S) (By Licensee)	VOLUME DEPLETION (NMm^3) BY SPECIES				
	CONIFER		HARDWOOD		TOTAL
		Subtotal		Subtotal	
TOTAL CURRENT					
TO DATE					
BALANCE					

INSTRUCTIONS

TABLE 6.3

ANNUAL REPORT OF WOOD UTILIZATION BY LICENSEE

A progress report - complete annually. Indicate the year to which the report pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5). The report presents the total volume of wood utilization for the MU/Forest for the year indicated.

1. CONSUMER(S): List all licensees, including third party and Order in Council and District Cutting Licences, that harvested timber from the MU/Forest during the schedule. Licensees for some methods of disposal may be grouped (e.g., DCL s and Tender Sales).
   Types of licensees:
      O.C. - Order in Council
      DCL - District Cutting Licence
      Sale By Tender
      Salvage
      FMA - Forest Management Agreement
      TSA - Timber Sale Agreement
   Normally, the list of licensees should be the same as those in Table 4.16 and 4.18.1 .

2. VOLUME: Source--> Scaling Returns
   Enter volume by species for each licensee or group of licensees in net merchantable cubic metres (NMm^3). Subtotal by conifer and hardwood and enter TOTAL VOLUME for all species by licensee.

3. TOTAL CURRENT: Enter column totals by species, subtotals, and total. This provides the total volume by species utilized from the MU/Forest for the current year.

4. TO DATE: Enter cumulative species volumes for the volume utilized to date. Include utilization from previous year(s) in the term plus the TOTAL CURRENT depletion.

5. BALANCE: Enter the difference between the TOTAL PLANNED VOLUME utilization (Table 4.18.1) and total cumulative volume TO DATE. This represents the balance remaining to be utilized for the term.

6. Enter volume in cubic metres. Conversion:
   1 cunit = 2.8317 cubic metres (m^3)
   1 cord = 2.4069 cubic metres (m^3)
   1 cubic metre (m^3) = 35.3147 cubic feet

SUBMISSION: Forward the completed report annually by NOVEMBER 15th to the MNR district manager responsible for the area. The DM forwards a copy immediately to the regional director and the Director, Timber Sales Branch.

TABLE 6.4.1

ANNUAL REPORT OF RENEWAL AND MAINTENANCE OPERATIONS

April 1, ____ to March 31, ____
Year 1, 2, 3 ,4, 5 (circle one) of the Five-Year Term

______________________________ MU/FOREST

	AREA (Ha)								
	RECENT CUTOVER		B&S & NSR		STANDS		TOTAL		
RENEWAL	Current	To Date	Current	To Date	Current	To Date	Current	To Date	Balance
UNEVEN-AGED MANAGEMENT									
Selection Cut - Harvest									
- Improvement									
TOTAL UNEVEN-AGED									
EVEN-AGED MANAGEMENT									
NATURAL REGENERATION									
Clear Cut									
Strip Cut									
Seed Tree Cut									
Shelterwood Cut - Uniform									
- Strips									
SUB-TOTAL NATURAL									
ARTIFICIAL REGENERATION									
Planting - Bareroot (Ha)									
(000's) Trees									
- Container (Ha)									
(000's) Trees									
- Cuttings (Ha)									
(000's) Trees									
Total Planting (Ha)									
(000's) Trees									
Seeding - Direct (Ha)									
- With Site Prep.									
Scarification									
SUB-TOTAL ARTIFICIAL									
TOTAL EVEN-AGED									
TOTAL RENEWAL									
RETREATMENT - Planting (Ha)									
(000's) Trees									
- Seeding									
SITE PREPARATION									
Mechanical									
Chemical									
Prescribed Burn									
TOTAL SITE PREPARATION									
MAINTENANCE									
TENDING									
Cleaning - Manual									
- Chemical - Ground									
- Aerial									
- Mechanical									
Thinning and Improvement									
Pruning									
Fertilization and Cultivation									
Drainage									
TOTAL TENDING									
PROTECTION									
PEST CONTROL - Ground									
- Aerial									
TOTAL PROTECTION									

INSTRUCTIONS

TABLE 6.4.1

ANNUAL REPORT OF RENEWAL AND MAINTENANCE OPERATIONS

A progress report - complete annually. Indicate the year to which the report pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5).

1. RENEWAL:

Uneven-aged Management: Area is reported only once in a cutting cycle as selection cut harvest. Any other treatments of any kind are reported as selection cut improvement.

Selection Cut:

Harvest: is the removal of trees either as scattered individuals or in small groups at relatively short intervals and repeated indefinitely. The objective is representation of all size classes distributed throughout stand. The associated area is reported after cutting has occurred and only once in a cutting cycle.

Improvement: includes the improvement of uneven-aged stands whether of a non-commercial or commercial nature.

Even-aged Management:

Natural Regeneration:

Clear Cut: Clear cutting is the removal of the entire growth in one operation from an area wider than five chains. This planned silvicultural clear cut is a regeneration treatment in itself and is commonly associated with the poplar or maple WGs.

Strip Cut: Strip clear cuts or blocks which are less than five chains in width. Only the net area is recorded and reported at the time of the cut. If site preparation is required to complete the prescription, it is reported as site preparation when the operation is conducted.

Seed Tree Cut: Seed tree cut is the operation where trees are left either singly or in groups for seed dispersal. Normally, there would be no harvest of these seed trees. The total area is reported at the time of the cut. If site preparation is required to complete the prescription, it is reported as site preparation when that operation is conducted.

Uniform Shelterwood Cut: The seeding cut where the cutting occurs uniformly across the stand. The total area of the cut stand is reported at the time of the seeding cut.

Artificial Regeneration:

Planting Bare Root: Enter area in hectares and number of trees in thousands. Enter same for Container and Cuttings. Currently the planting of cuttings is limited to non-rooted poplar and willow species.

Seeding: Direct or with site preparation, including the use of the Bracke seeder and seed barrels.

Scarification: Applies exclusively to regeneration of recently harvested jack pine cutovers. By definition it is the only treatment the area receives.

2. RETREATMENT: Includes the planting or seeding of areas which were previously recorded as renewal treatments and have not reached desired stocking.

3. SITE PREPARATION: Do not include chemical applications in conjunction with planting.

4. MAINTENANCE:

Tending: Cleaning, thinning and improvement, pruning, fertilization and cultivation, and drainage.

Protection: The application of pesticides normally will not be forecast on a five-year basis but is scheduled annually and reported annually and in the five-year report.

5. CURRENT: Enter the area (hectares) of renewal and maintenance treatments which were carried out during the year under each of the four column headings.

6. TO DATE: Enter the cumulative area depleted for each of the renewal and maintenance categories to date. Include previous year(s) plus the current.

7. BALANCE: Enter, in the total column only, the difference between total FORECAST renewal and maintenance (Table 4.19) and the cumulative total to date. This represents the balance remaining to be treated for the term. Normally, a balance will not be available for protection since a forecast may not have been made.

SUBMISSION: Forward the completed report annually by April 10th to the MNR district manager responsible for the area. The DM forwards a copy immediately to the regional director and the Director, Timber Sales Branch. The report represents the total area of renewal and maintenance for the MU/Forest for the year indicated and should not differ from any other source of similar information (such as the expenditure accounting system).

TABLE 6.4.2

ANNUAL REPORT
OF
RENEWAL AND MAINTENANCE OPERATIONS
—TREATED AT COMPANY COST

April 1, ____ to March 31, ____
Year 1, 2, 3 ,4, 5 (circle one) of the Five-Year Term

________________________________ MU/FOREST

	AREA (Ha)								
	RECENT CUTOVER		B&S & NSR		STANDS		TOTAL		
RENEWAL	Current	To Date	Current	To Date	Current	To Date	Current	To Date	Balance
UNEVEN-AGED MANAGEMENT									
Selection Cut - Harvest									
- Improvement									
TOTAL UNEVEN-AGED									
EVEN-AGED MANAGEMENT									
NATURAL REGENERATION									
Clear Cut									
Strip Cut									
Seed Tree Cut									
Shelterwood Cut - Uniform									
- Strips									
SUB-TOTAL NATURAL									
ARTIFICIAL REGENERATION									
Planting - Bareroot (Ha)									
(000's) Trees									
- Container (Ha)									
(000's) Trees									
- Cuttings (Ha)									
(000's) Trees									
Total Planting (Ha)									
(000's) Trees									
Seeding - Direct (Ha)									
- With Site Prep.									
Scarification									
SUB-TOTAL ARTIFICIAL									
TOTAL EVEN-AGED									
TOTAL RENEWAL									
RETREATMENT - Planting (Ha)									
(000's) Trees									
- Seeding									
SITE PREPARATION									
Mechanical									
Chemical									
Prescribed Burn									
TOTAL SITE PREPARATION									
MAINTENANCE									
TENDING									
Cleaning - Manual									
- Chemical - Ground									
- Aerial									
- Mechanical									
Thinning and Improvement									
Pruning									
Fertilization and Cultivation									
Drainage									
TOTAL TENDING									
PROTECTION									
PEST CONTROL - Ground									
- Aerial									
TOTAL PROTECTION									

INSTRUCTIONS

TABLE 6.4.2

ANNUAL REPORT OF RENEWAL AND MAINTENANCE OPERATIONS -TREATED AT COMPANY COST

This table is completed following the instructions for Table 6.4.1 for those renewal and maintenance operations which were carried out by a company at their own expense.

TABLE 6.4.3*

ANNUAL REPORT
OF
RENEWAL AND MAINTENANCE OPERATIONS
(SUMMARY)

April 1, _____ to March 31, _____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

______________________________ FOREST

	RECENT CUTOVER		B&S & NSR		STANDS		TOTAL	
	Current (Ha)	Payment($)	Current (Ha)	Payment($)	Current (Ha)	Payment($)	Current (Ha)	Payment($)
RENEWAL UNEVEN-AGED MANAGEMENT								
EVEN-AGED MANAGEMENT Natural Regeneration Artificial Regeneration Blended								
TOTAL REGENERATION								
RETREATMENT								
SITE PREPARATION								
MAINTENANCE TENDING		▨		▨		▨		
PROTECTION	▨	▨	▨	▨	▨	▨		▨
OTHER COSTS CHEMICALS ($)	▨	▨	▨	▨	▨	▨	▨	
CONE COLLECTION ($)	▨	▨	▨	▨	▨	▨	▨	

* Only required for FMAs.

INSTRUCTIONS

TABLE 6.4.3

ANNUAL REPORT OF RENEWAL AND MAINTENANCE OPERATIONS (SUMMARY)

Complete and include as part of the annual work schedule (AWS) for FMA forests only. Complete for renewal and maintenance operations which are scheduled for the year. Indicate the year to which the schedule pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5).

MNR phase-in work is not included in this table.

1. RENEWAL: Enter the area treated (hectares) and payments received ($'s) under each of the four column headings: RECENT CUTOVER, B&S and NSR, STANDS, and TOTAL.

   Blended: Enter area (hectares) and payment ($'s) for combined regeneration treatments for which a single payment is made. Indicate those activities which form part of the blended operations.

2. MAINTENANCE:

   Tending: Enter current treatment area for the four categories and enter total payment ($s) for all tending under the total column.

   Protection: Enter current area only under the total column for insecticide spraying only. Payments are not made for this treatment.

3. OTHER COSTS: These are payments made for which there is no associated treatment area.

   Chemical and Cone Collection: Enter dollars under the Payment column under TOTAL.

SUBMISSION: Forward the completed report annually by April 10th to the MNR district manager responsible for the area. The DM forwards a copy immediately to the regional director and the Director, Timber Sales Branch. The report represents the total area of renewal and maintenance treatments which were completed on the forest by the agreement holder and the dollars, which were received by the FMA holder for such treatments, from the Crown.

TABLE 6.5

ANNUAL REPORT
OF
TREE IMPROVEMENT SUPPORT

for the year April 1, _____ to March 31, _____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

______________________________ MU/FOREST

TREE IMPROVEMENT CATEGORIES	UNITS	SPECIES												TOTAL		
		Current	To Date	Balance	Current	To Date	Balance	Current	To Date	Balance	Current	To Date	Balance	Current	To Date	Balance
Plus Tree Selection	Trees															
Cone Collection	Hl															
Seed Production Areas																
Established	Ha															
Maintained	Ha															
Seed Collection Areas																
Established	Ha															
Maintained	Ha															
Seed Orchards																
Established	Ha															
Maintained	Ha															

INSTRUCTIONS

TABLE 6.5

ANNUAL REPORT OF TREE IMPROVEMENT SUPPORT

A progress report - complete annually. Indicate the year to which the report pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5).

Complete for tree improvement support operations which were completed during the year and compare that quantity (Current) with the cumulative total (To Date) and the Balance remaining to be completed during the term.

1. CURRENT: Enter quantity (by species) for each category of improvement that was completed during the year.

2. TO DATE: Enter the cumulative total (by species) that has been completed to date for each category. Include the quantity from previous year(s) in the term plus the CURRENT.

3. BALANCE: Enter the difference between the quantity planned (FORECAST) to be completed (from Table 4.20) and the cumulative total TO DATE. This represents the balance remaining for the term.

SUBMISSION: Forward the completed report annually by April 10th to the MNR district manager responsible for the area. The DM forwards a copy immediately to the regional director and the Director, Timber Sales Branch.

TABLE 6.6

ANNUAL REPORT OF ACCESS ROAD CONSTRUCTION AND MAINTENANCE

April 1, _____ to March 31, _____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

______________________________ MU/FOREST

NAME OF ROAD	ROAD LENGTH (Km) AND COST/PAYMENTS ($000's)														
	Construction & Reconstruction										Maintenance				
	Primary					Secondary									
	Current		To Date		Balance	Current		To Date		Balance	Current		To Date		Balance
	Km	$	Km	$	Km	Km	$	Km	$	Km	Km	$	Km	$	Km
TOTAL															

NOTE: Companies show only government payments for $000's.

INSTRUCTIONS

TABLE 6.6

ANNUAL REPORT OF ACCESS ROAD CONSTRUCTION AND MAINTENANCE

A progress report - complete annually. Indicate the year for which the report pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5).

Complete for road construction and maintenance operations which were completed during the year and compare that quantity (Current) with the cumulative total (To Date) and the Balance remaining to be completed during the term. Current and To Date are compared for both road lengths (kilometres) and expenditures ($).

Companies are only required to report dollars which they have received as payments for road construction and maintenance during the year.

For Crown units, enter the actual costs/expenditures for the road during the year.

1. NAME OF ROAD: List the roads by name or number directly from Table 5.6 (Annual Schedule of Access Road Construction and Maintenance).

2. CURRENT: Enter for each road name or number the kilometres and dollars for road operations that were completed during the year for each of the categories: Primary, Secondary, and Maintenance.

3. TO DATE: Enter the cumulative total kilometres and dollars that have been completed to date for each of the categories: Primary, Secondary, and Maintenance. Include the quantity from previous year(s) in the term plus the CURRENT.

4. BALANCE: Enter the difference between the kilometres planned (FORECAST) to be completed (from Table 4.21) and the cumulative total TO DATE (kilometres). This represents the Balance (kilometres) remaining for the term.

5. TOTAL: Complete the column totals to indicate the annual totals for the MU/Forest.

SUBMISSION: Forward the completed report annually by April 10th to the MNR district manager responsible for the area. The DM forwards a copy immediately to the regional director and the Director, Timber Sales Branch.

TABLE 6.7.1

ANNUAL REPORT OF FTG ASSESSMENT AND SUCCESS

April 1, _____ to March 31, _____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

________________________________ MU/FOREST

SUCCESS BY WG/FU								
	Free-to-Grow							
	Assessed (Ha)			Approved (Ha)				
				Age Class				
WG/FU	CURRENT	TO DATE	BALANCE	1-5	6-10	11-15	16-20	TOTAL
Treated								
Subtotal								
Untreated								
Subtotal								
TOTAL								

INSTRUCTIONS

TABLE 6.7.1

ANNUAL REPORT OF FTG ASSESSMENT AND SUCCESS

A progress report - complete annually. Indicate the year to which the report pertains by circling the appropriate year in the title (i.e., 1, 2, 3, 4, 5).

Complete for FTG area assessed during the year and compare that quantity (Current) with the cumulative total (To Date) and the Balance remaining to be completed during the term. Also complete for the area of FTG assessment that has been approved during the year.

1. CURRENT: Enter the area in hectares by WG/FU for Treated and Untreated regenerating areas on which FTG assessment was completed during the year.
2. TO DATE: Enter the cumulative total area in hectares by WG/FU for Treated and Untreated regenerating areas assessed for FTG that has been completed to date. Include the area from previous year(s) in the term plus the CURRENT.
3. BALANCE: Enter the difference between the area planned (FORECAST) to be assessed (from Table 4.22) and the cumulative total TO DATE. This represents the Balance remaining for the term.
4. APPROVED: Enter the area by WG/FU for treated and untreated FTG assessed area that has been approved during the year. Enter the area under the appropriate five-year age class. Complete the total column indicating the sum of the area in all five-year age classes by WG. Any difference between the Total Approved column by WG/FU and the Current Assessed column should be explained.
4. TOTAL: Enter the total for all columns to indicate the Total Assessed and Approved for the MU/Forest for the year.

SUBMISSION: Forward the completed report annually by April 10th to the MNR district manager responsible for the area. The DM forwards a copy immediately to the regional director and the Director, Timber Sales Branch.

TABLE 6.7.2*

ANNUAL REPORT
OF
STOCKING ASSESSMENT

April 1, _____ to March 31, _____
Year 1, 2, 3, 4, 5 (circle one) of the Five-Year Term

_______________________________ FOREST

ASSESSMENT STATUS BY WG/FU (Ha)												
	Stocking (%)											Total Assessed
WG/FU	0	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	
TOTAL												

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* ONLY REQUIRED FOR FMA'S

INSTRUCTIONS

TABLE 6.7.2

ANNUAL REPORT OF STOCKING ASSESSMENT

This table is to be completed by FMA agreement holders for all stocking assessment which has been completed during the year.

A progress report - complete annually. Indicate the year for which the report pertains by circling the appropriate year in the title (i.e. 1, 2, 3, 4, 5). Complete for all stocking assessment surveys which were completed during the year.

1. ASSESSMENT STATUS: Enter the area (hectares) by WG/FU by Stocking Percent and indicate Total assessed by WG/FU. Indicate the area of the WG/FU assessed by entering the appropriate area in one of the stocking percent categories.
2. TOTAL: Enter all column totals to indicate the area by Stocking Percent and Total Assessed for the MU/Forest for the year.

This table represents the status of five-year-old renewal treatments by WG/FU which can be compared with the stocking standards contained in Table 4.11 (Silvicultural Ground Rules for Normal Operations).

SUBMISSION: Forward the completed report annually by April 10th to the MNR district manager responsible for the area. The DM forwards a copy immediately to the regional director and the Director, Timber Sales Branch.

APPENDICES

APPENDIX A: GLOSSARY OF TERMS

The purpose of this glossary is to define and to explain terms, used in forestry or otherwise, which appear and are of importance in the text of the Timber Management Planning Manual for Crown Land in Ontario (1985).

Definitions that have been taken fully modified or adapted from an already existing glossary are so indicated. Sources for these entries are abbreviated as follows:

BCFT	British Commonwealth Forest Terminology, Part I (1953)
CEA	Class Environmental Assessment for Forest Management on Crown Lands in Ontario — Draft (September 1983)
CFIT	A Guide to Canadian Forest Inventory Terminology and Usage (1978)
CTA	The Crown Timber Act (1982)
EAA	The Environmental Assessment Act (1975)
FMM	Forest Management Manual for the Province of Ontario (1980)
FRI	Forest Inventory Procedure for Ontario (1978)
MFM	Manual of Forest Management Plan Requirements for the Province of Ontario (1977)
URN	Items from Terminology of Forest Science: Technology Practice and Products (1971) are listed by Universal Reference Number.

Underlined words in the definitions are defined in the glossary.

Age Class: One of the intervals into which the age range of forest stands is divided for classification and use (Adapted URN 87).

Allocation: Designation of forest estate areas for specific treatments such as depletion, forest renewal, and forest maintenance.

Allowable Cut: see Maximum Allowable Depletion.

Annual Work Schedule: A statement, mainly tabular in form, showing the order and extent of all work of any nature to be carried out during one year consistent with the Timber Management Plan (Adapted URN 4417).

Barren and Scattered (B & S): Productive forest land which, because of natural or artificial disturbance, contains only scattered trees (stocking below 0.25) or no trees at all with either shrub cover or bare soil, but no significant amount of regeneration. Treatment is required to restore such areas to productivity (FRI).

"Bump-Up": The elevation of a Timber Management Plan, or a component part of it, from the class environmental assessment to an individual environmental-assessment status (Modified CEA).

Cleaning: An operation in a young stand, not past the sapling stage, to free the best trees from undesirable individuals of similar age or size which overtop them or are likely to do so. Cleaning may be accomplished by hand or by mechanical or chemical means (MFM).

Clear Cut (harvesting operation): The removal of the entire standing crop over a considerable area in one operation, with or without leaving seed-trees. In practice, may refer to exploitation that leaves much of unsaleable material standing (Adapted URN 1064 and URN 1065).

Clear-Cut System: An even-aged silvicultural system where the entire growth is harvested over a considerable area in one operation, with or without leaving seed-trees (Adapted URN 1067).

Compartment: The basic territorial unit of a forest estate permanently defined for purposes of location, description, and record, and as a basis for forest management (URN 1164).

Crop: The vegetation growing on a forest area, more particularly the trees forming stands (Adapted URN 1416).

Crown Representative: A professional forester employed by the Ministry of Natural Resources and designated for each Forest Management Agreement (FMM).

Cutting Age (Syn. Harvest Age): The age at which an individual tree or crop attains the properties required to fulfil the objects of management (Adapted BCFT).

Cutting Cycle (management): The planned period within which all portions of a working group or forest unit should be partially cut over in orderly sequence under the selection system (Adapted BCFT).

Delay Period (Syn. Regeneration Period): The planned number of years deemed necessary between the year in which a stand is depleted and the regeneration initiation.

Depletions: A diminution of the growing stock on the forest estate: in the FRI recording process, a reduction in the free-to-grow area because of reclassification into barren and scattered due to harvest, burning, flooding, wind damage, or insects and disease; in the maximum allowable depletion area control process, a recording against the currently allocated areas caused by harvest, burning, flooding, wind damage, insects and disease, allocation to other ownership or uses, and declaration of inoperability (bypass).

Dominant: Generally an individual or species of the upper layers of the canopy (URN 1828). Of a species in a mixed crop, that is the most numerous and vigorous (URN 1830).

Environment: All the biotic factors of a site (URN 2069). In Ontario the legal definition for environment is:

(i) air, lands, or water;
(ii) plant and animal life, including man;
(iii) the social, economic, and cultural conditions that influence the life of man or a community;
(iv) any building, structure, machine, or other device or thing made by man;
(v) any solid or liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from the activities of man; or
(vi) any part or combination of the foregoing and the interrelationships between any two or more of them (EAA).

Establishment: The process of developing a crop to the stage at which the young trees may be considered established, i.e., safe from normal adverse influences (e.g., frost, drought, weeds, or browsing) and no longer in need of special protection or special tending, but only routine cleaning, thinning, and pruning (URN 2105).

Establishment Period: The time elapsing between the initiation of regeneration and its acceptance to the free-to-grow status.

Even-Aged: Applies to stands or forests in which relatively small age differences exist between individual trees. The maximum difference in age is usually twenty years (Adapted BCFT).

Final Cutting (harvesting operation) (Syn.Final Felling): The removal of seed or shelter trees after regeneration has been effected, or removal of the entire crop of mature trees under a clear-cut silvicultural system.

Forest: (Ecology) A plant community predominantly of trees and other woody vegetation, growing more or less closely together (URN 2441); (Silvicultural management) An area managed for the production of timber and other forest products, or maintained under woody vegetation for such indirect benefits as protection of site or for recreation (URN 2442).

Forest Estate (Syn.Forest Property): An area, whatever its ownership, used for forestry purposes (URN 2458).

Forest Inventory (management): A survey of an area to determine such data as area, condition, timber, volume, and species, for specific purposes such as planning, purchase, evaluation, management, or harvesting (CFIT).

Forest Land: Land whose primary use is for forestry, and may include land not currently supporting tree growth (CFIT).

Forest Maintenance: Those operations that are undertaken to ensure the continuation and development of the established forest cover.

Forest Management Agreement: A contractual agreement between the MNR and a company under the Crown Timber Act to provide for a continuous supply of forest products from the designated lands for the wood-processing plants of the company and to ensure that the forests on such lands are harvested and regenerated to produce successive crops of timber on a sustained-yield basis.

Forest Products: Any raw material yielded by trees (Adapted URN 2484).

Forest Protection: The branch of forestry concerned with the prevention and control of damage to forests arising from fire; pests; pathogens; storm, frost, and other climatic agencies; and also from the action of man (URN 2487).

Forest Regulation (management): A branch of forestry concerned with the technical aspects of organizing and maintaining a forest to fulfil the objects of forest management (Adapted URN 2488).

Forest Renewal: Those silvicultural operations that are undertaken to provide forest cover.

Forest Stand: see Stand.

Forest Unit (a management aggregation for management purposes): An aggregate of stands, including potential forest areas assigned to this category, and managed under the same rotation and broad silvicultural system. A forest unit is a subdivision of a working group based on site or other characteristics. Working groups may not be combined into a forest unit.

Forestry: Generally, a profession embracing the science, business, and art of creating, conserving, and managing forests (i.e., forest management) and forest lands (i.e., forest estate) for the continuing use of their resources, material, or other forest products (URN 2493).

Free-to-Grow (FTG): Stands that meet stocking, height, and/or height growth rate, as specified in the ground rules and are judged to be essentially free from competing vegetation (Adapted FMM).

Gross Merchantable Volume: Volume of the main stem, excluding stump and top but including defective and decayed wood, of trees or stands (CFIT).

Gross Total Volume: Volume of the main stem, including stump and top as well as defective and decayed wood, of trees or stands (CFIT).

Ground Rules: Provide specifications, standards, and other instructions (mostly silvicultural) to direct management on management unit areas for a term concurrent with the operating period of the Timber Management Plan.

Harvest Age: see Cutting Age

Harvest Cut: The cut(s) recorded as depletions from which yield is derived; it may be either a single (clear-cut) or a series of cuts to produce regeneration (shelterwood, selection) (Modified MFM).

Harvesting: The removal of forest products for utilization, comprising cutting and sometimes initial processing and extraction (Adapted URN 2944).

Improvement Cutting: The elimination or suppression of less valuable in favour of more valuable tree growth, typically in mixed uneven-aged forest (Modified URN 3156).

Management Documents: Consists of management plan, Annual Work Schedule, and ground rules.

Management Unit: A forest estate organized for efficient administration and control and operated according to one management plan. In Ontario there are three types of management units: (i) Crown management units, formed from unlicensed Crown lands and licensed areas too small to permit sustained-yield operations; (ii) company management units, where sufficient areas of Crown timber for sustained-yield operation have been licensed to one company; and (iii) Forest Management Agreement forests which comprise the part of the Crown land managed under a Forest Management Agreement (Modified FMM).

Maturity: The stage at which a tree, crop, or stand best fulfils the purpose for which it was maintained (Adapted URN 3713).

Maximum Allowable Depletion (MAD) (management): The calculated amount of area from which timber may be depleted over the five-year term of a Timber Management Plan by any means, including harvesting, fire, insects, disease, inoperability, or because of the allocation of the area to other uses to fulfil the objectives of management.

Net Merchantable Volume: Volume of the main stem, excluding stump and top as well as defective and decayed wood, of trees or stands (CFIT).

Non-Forest Land: Land withdrawn from timber production for at least the next rotation (FRI).

Non-Productive Forest Land: Land within a forested area which is incapable of commercial timber production owing to very low productivity (Adapted FRI).

Not Satisfactorily Regenerated (NSR): Productive forest land not stocked to a specified standard or which has not attained free-to-grow status.

NSR Class 1: These areas have regenerated to satisfactory stocking (Ontario standards or as specified in the management plan) and are free-to-grow. It should be noted that NSR Class 1 land is a transitional category.

NSR Class 2: These areas have regenerated to satisfactory stocking (Ontario standards or as specified in the management plan) but are not free-to-grow, and require tending treatment. The assumption here is that tending involves one or more aerial spray applications of herbicide on the overtopping competition which can be carried out at current cost.

NSR Class 3: These areas have not regenerated to satisfactory stocking (Ontario standards or as specified in the management plan) but could be regenerated through normal treatment methods at current costs. Normal treatments include site preparation, planting or seeding, and tending.

NSR Class 4: These areas have not regenerated to satisfactory stocking (Ontario standards or as specified in the management plan) but could be regenerated using existing technology at costs of 50 percent to 100 percent greater than current costs (special equipment or techniques may be needed thereby increasing the cost above the current levels). This category will most commonly apply to older cutovers with heavy residual content or difficult terrain.

NSR Class 5: These areas have not regenerated to satisfactory stocking (Ontario standards or as specified in the management plan) and cannot be regenerated using existing technology except at costs greater than 100 percent over current treatment costs. This category will most commonly apply to cutovers with very heavy residual content or very difficult terrain, wetness, or access problems. This class can be subdivided where:

(i) Costs are excessive due to lack of access. A change in accessibility would allow these lands to be reclassified to class 3 or 4.

(ii) Costs are excessive due to terrain or technical problems.

NSR Class 6: These areas have been depleted

(i) within the last five years and are not yet subject to the fifth-year stocking assessment, or

(ii) five or more years in the past and are regenerated to satisfactory stocking (Ontario standards or as specified in the management plan) and do not require tending, but cannot be classed as free-to-grow (and therefore as NSR class 1 or 2) because of insufficient height or height growth.

OWOSFOP: Acronym for "Ontario Wood Supply and Forest Production" (computerized simulation model) (FMM).

Pathogen: An organism, essentially microscopic, or a virus, directly capable of causing disease (URN 4212).

Pest: An organism, more particularly an insect or one of the mammalia, capable of causing material damage (URN 4296).

Population: The aggregate of all units, finite or infinite, forming the subjects of study (URN 4500).

Production Forest: All productive forest land managed primarily to growing timber for industry, unless otherwise reassigned (Modified FRI).

Production Forest Reserve: Production forest stands (site class X, 1, 2, and 3) which in the opinion of photointerpreters may constitute a logging or silvicultural problem (Modified FRI).

Protection Forest: All productive forest land managed primarily to exert beneficial influence on soil, water, landscape, or for any other purpose when production of merchantable timber, if any, is incidental (Modified FRI).

Productive Forest Land: All forest areas capable of growing commercial trees and not withdrawn from such use (Modified FRI).

Professional Forester: A person registered under the Ontario Professional Foresters Association Act, 1957 (CTA).

Quadrat: A small, clearly demarcated, sample area of known size on which ecological observations are made (URN 4672).

Regeneration: The renewal of a tree crop whether by natural (self-sown seed or by vegetative means) or artificial means (sowing and planting). This term may also be used to describe the young crop itself (Adapted URN 4843, 4844, 4846, 4848).

Regeneration Class: The area, and the young trees in the area, being managed during the regeneration interval in the shelterwood silvicultural system. In this interval old and young trees occupy the same area, young being protected by the old.

Regeneration Initiation: The year in which the new crop is deemed to be started whether by planting, natural or artificial seeding, or by vegetative means.

Regeneration Interval: The period between the seed cut and the final cut on a particular area under one of the shelterwood systems (URN 4852).

Regeneration Period: The period of time encompassing the delay period and the establishment period.

Rotation Period: The planned number of years between the year of harvest of one crop to the harvest of the next crop to a specified condition at maturity (Modified MFM).

Salvage Cut: The removal of trees killed or injured by fire, insects, fungi, or other harmful agencies for the purpose of utilizing merchantable timber before it becomes worthless (BCFT).

Sample: A part of a population consisting of one or more sampling units selected and examined as representative of the whole (Adapted URN 5046).

Sampling Unit: The ultimate unit of assessment or measurement in a sample. It may be the individual (e.g., a sample tree), any given number of individuals, a given area of ground, etc. (URN 5060, 5061).

Scarification: Mechanical loosening of the topsoil of open areas, or breaking up the forest floor, in preparation for regeneration by natural seeding. In Ontario, it is applied exclusively on recently harvested jack pine cutovers (Adapted URN 5134).

Seed Cut: Removing trees in a mature stand so as to effect permanent opening of its canopy and so provide conditions for securing regeneration from the seed of retained trees; the first (if there was no preparatory cutting) of the shelterwood cuttings under a shelterwood system (Adapted URN 5191).

Seeding — Direct: The scattering of seed more or less evenly over a whole area (URN 698).

Seed-Tree (harvesting operation): A clear cut save for a small number of seed bearers left singly or in small groups (URN 5213).

Selection Cut (harvesting operation): The removal of mature and/or undesirable trees individually or in small groups at relatively short intervals.

Selection System: An uneven-aged silvicultural system where mature and/or undesirable trees are removed individually or in small groups over the whole area, usually in the course of a cutting cycle. Regeneration is generally natural (Adapted BCFT).

Shelterwood Cut (harvesting operation): The removal of mature trees in series of two or more cuts (preparatory, seed, removal, final) whether by cutting uniformly over the entire stand area or in strips.

Shelterwood System: An even-aged silvicultural system where mature trees are harvested in a series of two or more cuts (preparatory, seed, removal, final) for the purpose of obtaining natural regeneration under shelter of the residual trees, whether by cutting uniformly over the entire stand area or in narrow strips. Regeneration is natural. Regeneration interval determines the degree of even-aged uniformity (Adapted MFM).

Silvics: The study of the life history and general characteristics of forest trees and stands with particular reference to locality factors, as a basis for the practice of silviculture (Adapted URN 5381).

Silviculture: Generally, the science and art of cultivating forest crops, based on a knowledge of silvics (URN 5384). More particularly, the theory and practice of controlling the establishment composition, constitution, and growth of forests (URN 5385).

Silvicultural System: A process, following accepted silvicultural principles, whereby crops constituting forest are tended, harvested, and regenerated, resulting in the production of crops of distinctive form. Systems are conveniently classified according to the method of harvesting the mature stands with a view to regeneration and according to the type of crop produced thereby (Adapted URN 5383).

Silvicultural Treatment: The activities, whether biological or managerial, through which a silvicultural prescription is met.

Site: An area considered in terms of environment, particularly as this determines the type and quality of the vegetation the area can carry (URN 5413).

Site-Class: A measure of the relative productive capacity of a site for a particular species. The average height at a given age is generally the basis for classification (BCFT).

Site Preparation: Disturbance of the forest floor and the topsoil to create suitable conditions for natural or artificial regeneration by mechanical or chemical means, or by prescribed burning (Modified MFM).

Stand (Syn.Forest Stand): A community of trees possessing sufficient uniformity in composition, constitution, age, arrangement, or condition to be distinguishable from adjacent communities, so forming a silvicultural or management entity (Adapted URN 5700).

Stand Density: Quantitative measure of a stand in terms of basal area, number of trees, or volume per unit area (Adapted CFIT).

Stocking: An expression of the adequacy of tree cover on an area, in terms of crown closure, percentage of stocked quadrats, number of trees, basal area, or volume, in relation to a pre-established managerial norm (Adapted CFIT).

Strip Cut (harvesting operation): A clear cut where the cut areas are in strips or blocks.

Stumpage Charges: The amount equal to the total of the amount of the Crown dues and any other amounts added thereto in fixing the price to be paid for Crown timber (CTA).

Sub-Compartment: A temporary subdivision of a compartment differentiated for separate treatment (Adapted URN 1165).

Sustained Yield: The growth of timber that a forest can produce and that can be cut to achieve a continuous approximate balance between the growth of timber and timber cut (CTA).

Systematic Sample: A sample consisting of sampling units selected in conformity with some regular pattern (Adapted URN 6049).

Tending: Generally, any operation carried out for the benefit of a forest crop at any stage of its life, e.g., cleaning, thinning, pruning; typically in an even-aged forest (BCFT).

Thinning: A tending operation where a cut is made in a stand, usually past the sapling stage, for the purpose of stimulating the growth and improving the quality of the stand (Modified BCFT).

Timber Management Plan: Written document containing pertinent information and prescriptions by means of which forest policy, aims, and objectives are translated into a continuity of specific treatments on a forest estate for a specified period of years (Modified MFM).

Uneven-Aged: Stands or forests in which trees markedly differ in age (Adapted URN 6472).

Volume: The amount of wood in a tree, stand, or other specified area, according to some unit of measurement or some standard of use (CFIT). See also Gross Merchantable Volume, Gross Total Volume, and Net Merchantable Volume.

Water: Lakes, rivers, etc., taken to the high-water mark of generally flooded area (FRI).

Working Circle: A division of the management unit for a specific reason which requires a calculation and allocation of the maximum allowable depletion separate from the calculation for the remainder of the management unit (Modified MFM).

Working Group (an inventory aggregation for management purposes): An aggregate of stands, including potential forest areas assigned to this category, having the same predominant species, and managed under the same rotation and broad silvicultural system (Modified FRI).

Yield: The harvest, actual or estimated, howsoever measured, over a given period of time.

APPENDIX B: MAXIMUM ALLOWABLE DEPLETION (MAD) CALCULATION

1.0 Introduction

Maximum allowable depletion (MAD) now replaces the regulatory measure which was known as the annual allowable cut (AAC).

There are two primary reasons for the change in terminology. First, the term annual allowable cut implies that the calculated amount is available for harvest disregarding the fact that the forest is depleted annually by losses due to natural causes such as fire and insects and by losses due to allocation of forested areas to other uses where harvesting is not permitted (reserves). As a result the comparison of harvest cuts only to the calculated AAC was not a valid one. Second, the term annual allowable cut implies that actual and allowable cuts should be balanced on an annual basis, implying further that calculations should be carried out annually. These calculations, which are based on Forest Resource Inventory (FRI) data, are carried out for a management plan period (five years). Comparing annual depletions and allowable depletions at the end of each period provides data for analysis. An opportunity for updating the FRI data base to allow a recalculation to be made for the next period is also made at this time.

2.0 Purpose

The MAD is calculated for the five-year term of the Timber Management Plan to determine the extent of area which can be depleted over the five-year period. Through the allocation process described in The Timber Management Planning Manual for Crown Land in Ontario, the location and the extent of the MAD as well as the location and extent of surplus or deficit will be determined.

The recalculation of MAD for each five-year term of the Timber Management Plan will provide a moving picture of the status of the forest based on actual depletions and accruals.

It is important to realize that calculation of MAD is not an end in itself but a tool in timber management planning directly related to the objectives and strategies of management. The result of the calculation, therefore, must be considered as a guide in managerial decision making. The manager must ultimately decide, after weighing a number of considerations, what depletion rate will be applied and substantiate the reasons if the rate should differ from the rate calculated.

3.0 Methods of Calculation

An allowable depletion can be calculated by two methods generally known as the "Volume Control" method and the "Area Control" method. In Ontario the latter is used because it is simple and direct in application. It has the fundamental virtue of tying the cut to specific areas (allocation) and gives a precise indication of the area available for regeneration. A more substantial description of methods used in calculating the MAD can be found in various texts on forest management.

Deciding whether a forest (Working Group/Forest Unit) will be managed under an even-aged or uneven-aged management system will determine the methodology of calculating MAD. This decision is influenced by the tree species which are present and the products required.

The methodologies for calculating MAD are as follows:

— Uneven-aged Management (i.e., selection system)
  i) uneven-aged method
— Even-aged Management (i.e., Clear-cut/shelterwood systems)
  i) normal area method
  ii) average age method.

Under even-aged management in Ontario MAD is calculated using the average age method.

The optimum level of continuous timber production in even-aged management is a "normal" forest, that is, a forest where there is an equal distribution of equiproductive age classes, fully stocked with "normal" increment over the Production Forest area.

The actual forests of Ontario are non-normal in their current age-class distribution. Some management units have large areas of very old timber stands and some have extensive areas of immature timber stands. In the former case unless depletion is faster than normal many of the older stands will deteriorate beyond their economic value. In the latter case many of the stands will comprise trees too small to be economically harvested unless the depletion rate is reduced realistically.

The average-age concept introduces a deductive rationale to the calculation in that it compares the average age of the "actual" forest with the average age of the "normal" forest thus determining a factor which will accelerate or decelerate the depletion rate as the case may be.

4.0 Maximum Allowable Depletion Base

In Ontario MAD is calculated for each working group or forest unit using that part of the Production Forest in that working group or forest unit which is occupied by forest stands.

For uneven-aged management systems regeneration is considered to be part of the stand so that the total production forest area in that working group or forest unit is included in the calculation.

For even-aged management systems only that area which is regenerated, sufficiently stocked, and free-to-grow is included in the calculation.

While MAD should be calculated for each working group or forest unit, there may be some situations where the calculation is neither reasonable nor necessary. (All stands may be too young or the area too small.)

This managerial decision is made during the planning process and is documented in the plan.

5.0 Time

In contrast with the attributes of Area and Age which are matters of fact, the attribute of time (Rotation period, Regeneration period, cutting cycle) used in the calculation of MAD is a matter of reasoned judgement by the forest manager, based on some guiding principle, records and experience.

In even-aged management the rotation (i.e., the estimated time between final harvests) is separated into three components of time:

- the delay period, the time between harvest and subsequent regeneration treatment;
- the establishment period, the time between regeneration treatment and the time when the regeneration is judged free to grow. (The delay period plus the establishment period is called the Regeneration period); and
- the free-to-grow period, the length of time a forest stand is free to grow until it is depleted.

The rotation is determined by the age of the stand when it is planned to be harvested plus the estimated delay period.

These elements of time are illustrated in Figure B.1.

Ideally, trees would be cut at the point at which their annual growth rate equals the average growth rate over all years (Figure B.2). At this point there is the maximum average rate of volume interest. We call this "the biological optimum rotation". However, for commercial reasons we often cut later to get trees that are larger in diameter for certain types of products, or earlier to provide better economic returns

Figure B.1. Illustration of Rotation and Component Periods.

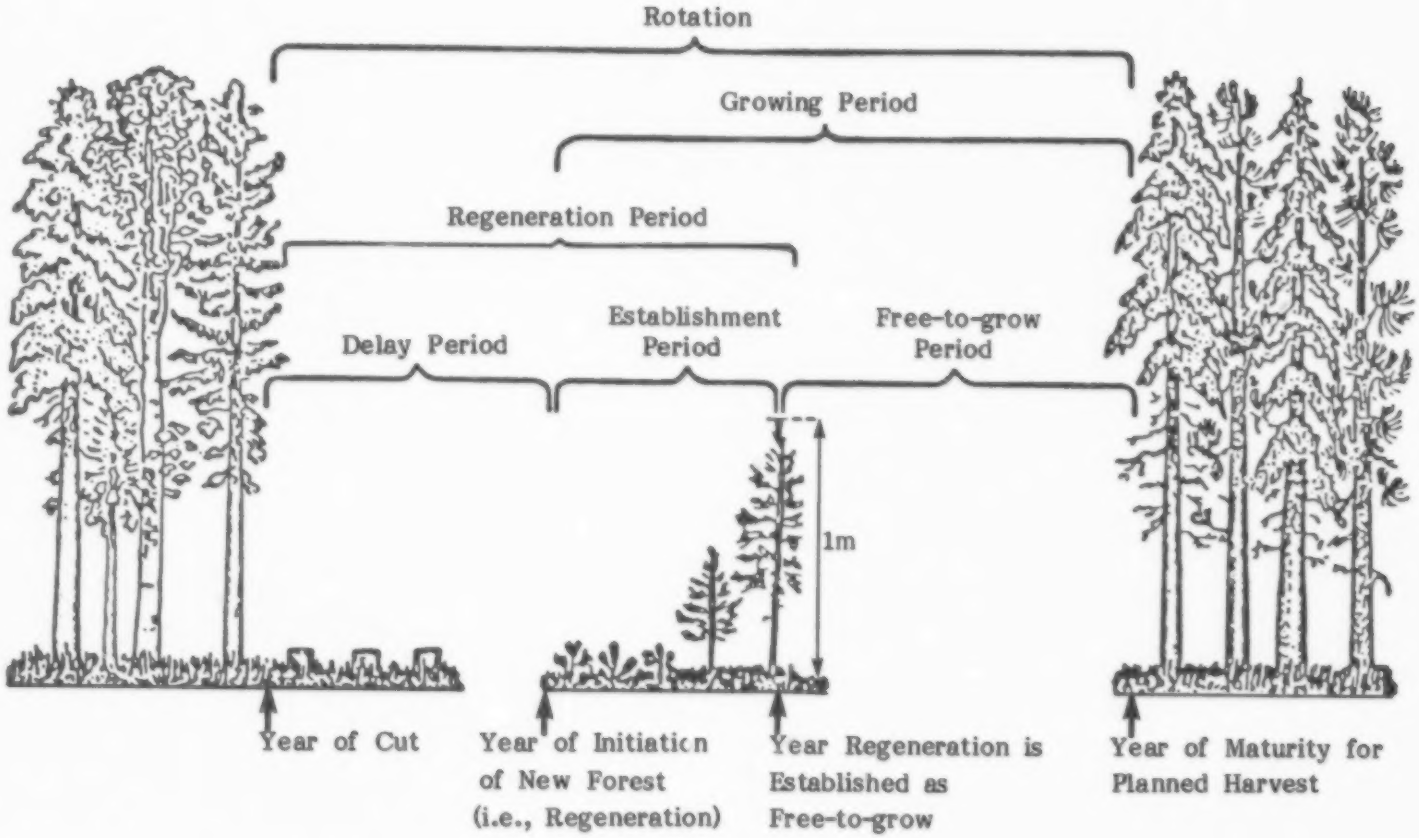
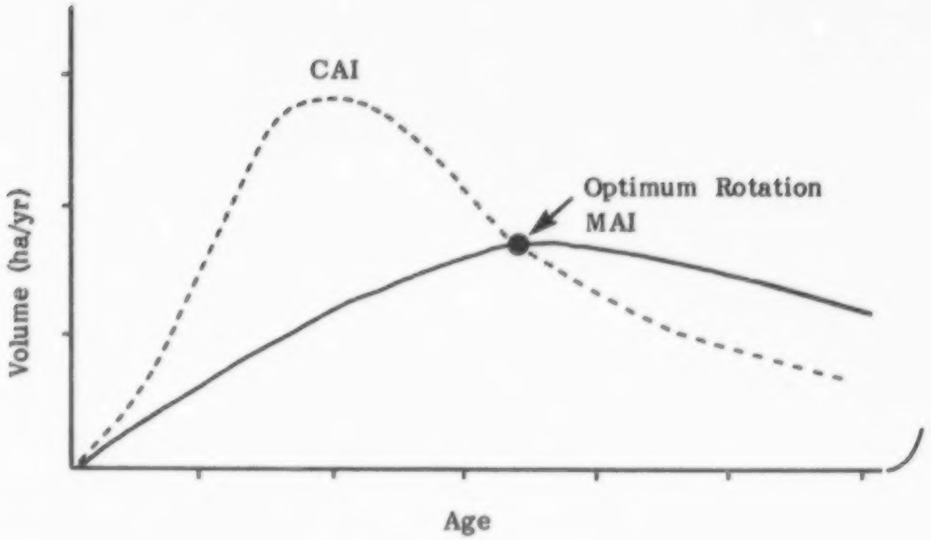

Rotation
Growing Period
Regeneration Period
Delay Period
Establishment Period
Free-to-grow Period
1m
Year of Cut
Year of Initiation of New Forest (i.e., Regeneration)
Year Regeneration is Established as Free-to-grow
Year of Maturity for Planned Harvest

Figure B.2. The Biological Optimum Intersection of the Current Annual Increment and the Mean Annual Increment Volume-growth Curves.



where the diameter of the tree is not critical (as for pulpwood).

The components of the regeneration period are not easily determined since it is often difficult to separate the delay period from the establishment period. Such factors as species, site conditions, regeneration techniques, and success rates involve reliance on analysis of past regeneration records and on the judgement and experience of the forest manager.

In uneven-aged management the objective is to produce an ideal distribution of diameter classes in an uneven-aged stand. Since uneven-aged management does not involve the liquidation of an old forest and replacement of it with a new forest, the concept of rotation as depicted in Figure B.1 does not apply.

Rather, the harvest is conducted regularly in relatively short intervals (ten to twenty years) with renewal and maintenance treatments being applied as components of the harvesting operation.

The time factor used in the MAD calculation is the cutting cycle, that is, the time between consecutive harvests. This time period is variable depending on the growth rate of the forest and, generally, the volume required to produce an economically viable harvest. Again this determination involves past records and the judgement and experience of the forest manager.

6.0 Calculation

The methodologies for calculating the maximum allowable depletion are as follows:

6.1 Unevenaged Method

$$\text{MAD} = \frac{\text{Area}}{\text{Cutting Cycle}} \times 5 \text{ (years)}$$

where	Area	is the area of the forest which will be managed as a unit (i.e., Forest Unit or Working Group);
	Cutting Cycle	is the length of time between successive cutting opportunities for a specific area; and
	5 (years)	is the five-year term of the Timber Management Plan.

For an area managed under an uneven-aged management regime, a MAD value is used as a guide to ensure that management is carried out in an orderly and consistent fashion. It indicates to the manager the area which must be reviewed in each planning period in order to avoid any part of the forest unit's being neglected. It also provides for consistency of effort on the part of the manager and, therefore, of the product coming from the area. Decisions regarding the implementation of operational practices should be consistent with MNR silvicultural guidelines for the working groups.

6.2 Even-Aged Method

6.2.1 Normal

$$\text{MAD} = \frac{\text{FTG Area}}{\text{Rotation Period} - \text{Regeneration Period}} \times 5 \text{ (years)}$$

where	FTG Area	is the area of the forest which is free-to-grow and will be managed as a unit (i.e., forest unit or working group);
	Rotation Period	is the length of time between harvests;
	Regeneration Period	is the length of time between harvest and subsequent regeneration attaining free-to-grow status; and
	5 (years)	is the five-year term of the Timber Management Plan.

A "normal" forest is one which has an even distribution of equally productive areas in all age classes. Under a sustained-yield concept, all of the MAD is depleted consistently in the oldest age classes and is regenerated immediately. The above formula calculates the sustainable level of what is considered an "ideal forest". Examination of input alternatives gives the sustainable level of various management strategies.

6.2.2 Average Age Area Method

$$\text{MAD} = \frac{\text{FTG Area}}{\underset{\text{Period}}{\text{Rotation}} - \underset{\text{Period}}{\text{Regeneration}}} \times 5 \text{ (years)} \times \begin{matrix}\text{Acceleration}\\ \text{Factor}\end{matrix}$$

where	FTG Area	is the area of the forest which is free-to-grow and will be managed as a unit (i.e., forest unit or working group);

Rotation Period	is the length of time between harvests;
Regeneration Period	is the length of time between harvest and subsequent regeneration attaining free-to-grow status;
5 (years)	is the five-year term of the Timber Management Plan; and
Acceleration Factor	is the ratio $\frac{\text{Average Age of FTG Area (Actual)}}{\text{Average Age of FTG Area (Normal)}}$ derived when comparing an actual forest to a "normal" forest.

In dealing with the actual forest, somewhat less than ideal situations exist (i.e., unequal age-class distribution). Comparing this forest to the normal forest, one can deduce whether the allowable depletion should be accelerated or decelerated. The Average Age Area method does exactly this. It compares attributes of the actual forest (actual average age) with those of a normal forest.

Where more than one harvest cut is applied to an area during a rotation (i.e., uniform shelterwood system) the calculated MAD must be multiplied by the number of harvest cuts which will be applied during the rotation.

6.2.3 There are three ways that the Maximum Allowable Depletion can be calculated for even-aged management.

i) using micro computer environment (Apple III/DEC350). Apple III/DEC350 Programs are available for these environments which allow the calculations to be made at the local level. Using summaries provided by the Forest Resources Inventory, the models do provide for some simulation capability into the future. Detailed instructions can be found in the user manual provided with the programs.

ii) using Ontario Wood Supply and Forest Productivity (OWOSFOP) model. For Forest Management Agreement (FMA) areas, OWOSFOP is the only accepted official means of calculating the MAD.

Forest Resources Inventory summaries are updated according to change data (depletions, etc.) to reflect the five-year term being planned for. The model also provides for a greater degree of simulation. Further information can be obtained from the Management Planning Section, Timber Sales Branch.

iii) manually. The following example is provided to illustrate the mathematical process of the MAD calculation.

EXAMPLE

This example illustrates the calculation of the maximum allowable depletion for a jack pine (Pj) forest unit consisting of Pj site classes (SC) X, 1, 2 and production forest reserve (PFR).

For the purpose of the example, the following parameters are used:

rotation age	70 years
delay period	0 years
establishment period	5 years

The regeneration period (a total of the delay and establishment periods) becomes five years. This also represents the free-to-grow (FTG) age. For ease of calculation, delay and establishment periods are normally rounded to the nearest five-year period.

Table B.1 shows the land base for example 1.

The average age must be determined for each age class of the FTG area. For age classes such as 21-40 or 41-60, the mid-points of 30 and 50 are used. The mid-point, which represents the theoretical average age, is used since the manual calculation of actual average would be too laborious. For the lowest age class (FTG to 20 years), the FTG age (five years) and the oldest age in the class (twenty years) are used to determine the average age of 12.5. The average ages for each age class therefore are:

Age Class	Average Age (yrs)
FTG (5 yrs)-20	12.5
21-40	30
41-60	50
61-80	70
81-100	90
101-120	110
121+	130

The average age for each age class must next be multiplied by the area within each age class as shown in Table B.1.

TABLE B.1
EXAMPLE LAND BASE AREA (HECTARES)

						Age Classes					
Site	NSR	NSR	FTG (5 yrs)							FTG	Total
Class	5	Other	-20	21-40	41-60	61-80	81-100	101-120	121+	Area	Area
X	30	70	150	2 168	430	1 724	88	12		4 572	4 672
1	12	126	20	1 460	2 004	808	116	30		4 438	4 576
2	104	86	374	90	128	14	26	90	60	782	972
PFR	248	260	20	60	1 002	80	280	14	100	1 556	2 064
Total	394	542	564	3 778	3 564	2 626	510	146	160	11 348	12 284

	Age Class	Avg. Age (yrs)	x	Area (ha)	=	Factor (ha-yrs)
FTG	(5 yrs)-20	12.5	x	564	=	7 050
	21- 40	30	x	3 778	=	113 340
	41- 60	50	x	3 564	=	178 200
	61- 80	70	x	2 626	=	183 820
	81-100	90	x	510	=	45 900
	101-120	110	x	146	=	16 060
	121+	130	x	160	=	20 800
	Total			11 348		565 170

The sum of all factors calculated by multiplying the average age by the area for each age class is then divided by the total FTG area to arrive at the weighted average age.

$$\frac{\text{Sum of Factors}}{\text{Area}} = \frac{565\ 170 \text{ ha-yrs}}{11\ 348 \text{ ha}} = 49.803 \text{ years}$$

Once the average age is determined for the actual forest, the same calculation must be done for the "normal" forest. The "normal" forest is one in which an equal amount of area is included in each one-year age class. To determine the "normal" forest distribution, the FTG area is divided by the number of years from FTG age (five years) to rotation age (seventy years).

$$\frac{\text{FTG Area}}{\text{Rotation - FTG Age}} = \frac{11\ 348 \text{ ha}}{65 \text{ yrs}} = 174.6 \text{ ha/yr}$$

The area by age class for the "normal" forest would therefore be:

	Age Class	Years/Class		ha/yr		ha/Class
FTG	(5 yrs)-20	15	x	174.6	=	2 619
	21-40	20	x	174.6	=	3 492
	41-60	20	x	174.6	=	3 492
	61-70	10	x	174.6	=	1 746

The weighted average age of the "normal" FTG area is determined in the same manner as for the actual forest, that is, by first multiplying the average age for each age class by the "normal" FTG area for that class as follows:

	Age Class	Avg Age (yrs)	x	Area (ha)	=	Factor (ha-yrs)
FTG	(5 yrs)-20	12.5	x	2 618	=	32 725
	21-40	30	x	3 492	=	104 760
	41-60	50	x	3 492	=	174 600
	61-70	65	x	1 746	=	113 490
	Total			11 348		425 575

The sum of the factors calculated is then divided by the FTG area to arrive at the weighted average age for the "normal" FTG area:

$$\frac{\text{Sum of Factors}}{\text{Area}} = \frac{425\ 575 \text{ ha-yrs}}{11\ 348 \text{ ha}} = 37.502 \text{ years}$$

The acceleration factor is then calculated by dividing the weighted average age of the actual FTG area by the weighted average age of the "normal" FTG area:

$$\frac{\text{Average age of actual FTG area}}{\text{Average age of "normal" FTG area}} = \frac{49.803}{37.502} = 1.328$$

The maximum allowable depletion (MAD) calculated on the average age method is:

$$\text{MAD} = \frac{\text{FTG AREA X 5 (yrs) X ACCELERATION FACTOR}}{\text{Rotation Period (yrs) - Regeneration Period (yrs)}}$$

$$= \frac{11\ 348 \text{ ha X 5 (yrs) X } 1.328}{70 \text{ yrs} - 5 \text{ yrs}}$$

$$= \frac{75\ 350.72 \text{ ha}}{65 \text{ yrs}}$$

$$= 1159.2 \text{ ha/yr}$$

For comparison purposes, the MAD calculated using the normal method would be:

$$\text{MAD} = \frac{\text{FTG AREA (ha) X 5 (years)}}{\text{Rotation Period (yrs) - Regeneration Period (yrs)}}$$

TABLE B.2

EXAMPLE: FIRST FIVE-YEAR TERM

					Age Classes						
	NSR	NSR	FTG (5 yrs)							FTG	Total
Action	5	Other	-20	21-40	41-60	61-80	81-100	101-120	121+	Area	Area
FRI now	394	542	564	3 778	3 564	2 626	510	146	160	11 348	12 284
Harvest						343	510	146	160		1 159
Regen	386	773	542								
End 5 years	780[a]	773[b]	918[c]	3 021[d]	618[e]	2 861[f]	313[g]			10 731	12 284

$$= \frac{11\ 348 \text{ ha} \times 5 \text{ yrs}}{70 \text{ yrs} - 5 \text{ yrs}}$$

$$= \frac{56\ 740 \text{ ha}}{65 \text{ yrs}}$$

$$= 872.9 \text{ ha/yr}$$

Thus, the MAD calculated using the average method is 286.3 ha/yr greater than that calculated using the normal method. This difference occurs because the actual forest has a significant area over rotation age resulting in an increase in allowable level of depletion.

Using the following parameters:

regeneration success — 66.7 percent
allocation — oldest first
depletion rate — 100 percent of MAD

Table B.2 illustrates the projection of operations for the first five-year term of the twenty-year management planning period.

This table takes the jack pine (Pj) forest unit land base and projects the harvest and regeneration activities, showing the effect on the age-class distribution.

The calculations in this example assume an equal distribution of five-year age classes within a twenty-year age class. In addition, the theoretical mid-point of the twenty-year period (i.e., 90 for the 81-100 class) is used rather than the actual mid-point to simplify the manual calculation.

The totals for the end of five years are calculated as follows:

a 780 ha is the total of the NSR5 at the start of the five-year term and 33.3 percent of the depletion area which was not successfully regenerated.

b 773 ha is the 66.7 percent of the depletion area which was successfully regenerated but is not yet free-to-grow.

c 918 ha is the total of the area still in the FTG-20 year age class at the end of the five-year term and the NSR area which is now free-to-grow. Since FTG age is five years there are only three five-year age classes in the FTG-to-20 class. Therefore, one-third of the area in FTG-20 at the start of the term moves to the next age class leaving two-thirds of the area (564 x 0.667) = 376 ha. This area plus the 542 ha of NSR which is now FTG equals 918 ha.

d 3021 is the total of the area remaining in the 21-to-40 age class (3778 x 0.75 = 2833) and the area entering the 41-to-60 age class from the FTG-20 class (564 x 0.333 = 188).

e 3618 ha is the total of the area remaining in the 41-to-60 age class (3564 x 0.75 = 2673) and the area entering the 41-to-60 age class from the 21-to-40 class (3778 x 0.25 = 945).

f 2861 ha is the total of the area remaining in the 61-to-80 age class (2626 x 0.75 = 1970) and the area entering the 61-to-80 age class from the 41-to-60 class (3564 x 0.25 = 891).

g 313 ha is the area moving from the 61-to-80 age class to the 81-to-100 class. This figure is the one-quarter of the 61-to-80 class which would normally move up minus the area depleted in the oldest ages ([2625 x 0.25] - 343 = 313).

The age-class distribution at the end of the first five-year term then becomes the basis upon which the MAD is calculated for the second five-year term. Once again the weighted average age of the actual forest must be calculated as follows:

	Age Class	Avg Age (yrs)	x	Area (ha)	=	Factor (ha-yrs)
FTG	(5 yrs)-20	12.5	x	918		11 475
	21- 40	30	x	3 021		90 630
	41- 60	50	x	3 618		180 900
	61- 80	70	x	2 861		200 270
	81-100	90	x	313		28 170
	Total			10 731		511 445

The weighted average age of the actual forest is then calculated:

$$\frac{\text{Sum of Factors}}{\text{Area}} = \frac{511\ 445 \text{ ha-yrs}}{10\ 731 \text{ ha}} = 47.661 \text{ years}$$

The average age of the "normal" forest remains the same (37.502 years). The acceleration factor new becomes:

$$\frac{\text{Average age of actual FTG area}}{\text{Average age of "normal" FTG area}} = \frac{47.661}{37.502} = 1.271$$

The MAD for the second five-year term is then calculated as follows:

$$\text{MAD} = \frac{\text{FTG AREA (ha) x 5 (yrs) x ACCELERATION FACTOR}}{\text{Rotation Period (yrs) - Regeneration Period (yrs)}}$$

$$= \frac{10\,731 \text{ ha} \times 5 \text{ (yrs)} \times 1.271}{70 \text{ yrs} - 5 \text{ yrs}}$$

$$= \frac{68\,195.51 \text{ ha}}{65 \text{ yrs}}$$

$$= 1049.2 \text{ ha/yr}$$

It can be seen that the harvesting of the oldest age classes has reduced the average age of the actual forest. This in turn has reduced the acceleration factor and resulted in a reduction to the MAD for the second five-year term. This reduction has also been increased by the reduction of the FTG land base by areas which were not successfully regenerated. The total reduction in MAD is 110 ha/yr.

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In addition to the silvicultural ground rules which are developed during the management-planning process and included in the body of the Timber Management Plan there are other ground rules which must be established for FMAs. These additional ground rules, which are outlined in this appendix, may consist either of required statements which must be included in all ground rules or of standards or procedures which must be negotiated.

The development of ground rules for FMAs is described in more detail in Procedure TS 06 01 14. The company and the Crown representative are responsible for writing the ground rules, usually with advice from a district steering committee or planning team. The ground rules must be completed in time to be submitted for public review with each new draft management plan. FMA ground rules will be a schedule to the agreement and will also be appended to the management plan.

1.0 Term of the Ground Rules

The following statement shall be given on the first page of each set of ground rules:

> These ground rules provide guidelines and standards for the forest management practices and treatments on Forest Management Agreement No._____ known as the [name of forest] of [name of company]. The ground rules commence on the ____ day of ____, ____, and end the ____ day of ____, ____.

2.0 Application

Unless specifically stated otherwise in these ground rules the definitions, methodologies, and procedures described in the Timber Management Planning Manual for Crown Land in Ontario shall apply to this agreement.

3.0 Phase-In

During the first five-year period of each agreement there may be a phasing-in of the company planting and a phasing-out of MNR planting. The phase-in is based on the planting program in the production-policy-implementation schedule and the targets should be tabulated in the ground rules. The company may increase its planting over the target if approved in the Annual Work Schedule and if stock and funds are available.

The phase-in does not apply to NSR lands.

During the phase-in of planting the MNR will be responsible for site preparation on the areas the MNR will plant, and the company will be responsible for site preparation on the areas it will plant. The arrangement may be altered by mutual consent.

Where there is a phase-in of treatments after an agreement is executed and the MNR undertakes certain treatments, any necessary retreatment or tending will be done by the company and will be paid for by the MNR according to the rates in the agreement.

4.0 Surveys

The following subsections deal with various types of surveys used to provide some of the data base for planning.

4.1 Operational Surveys

An operational survey may be done before the plan is submitted. A short description of the surveys or cruises that are used must be given in the ground rules. The description should state:

- the purpose of the survey or cruise;
- the type of survey or cruise, giving plot or strip size, sampling intensity, and sampling design; and
- the items measured, for example, site parameters, species, diameter, height, quality, etc. The sources used to determine estimates of volume and definition of any terms not self-explanatory, such as "merchantable volume," should be given.

Detailed survey instructions and survey data need not be submitted but must be available for reference.

4.2 Assessment of Stocking

It is the responsibility of a company with an FMA to carry out an assessment in the fifth year to ensure that stocking is in accordance with the standards set out in the ground rules. Minor exceptions to this requirement are dealt with in Section 4.6 of this appendix regarding part of the NSR Class 6 lands and in Section 2.0 of this appendix regarding the phase-in of planting.

The quadrat size shall be four square metres (4 m^2), and the MNR assessment system for stocking is suggested but not required. Ground rules may deal in more detail with stocking-assessment methods.

The proper time to do the stocking assessment is after the fifth growing season following the final regeneration treatment whch is applied. The MNR will do the fifth-year stocking assessment for areas treated by the MNR, if requested by the company.

4.3 Free-to-Grow Surveys

It is the responsibility of the company to request the areas to be assessed as free-to-grow, and it is the responsibility of the MNR to undertake the assessment and maintain the records for future audit and submit a stand description for FRI.

FTG requests will accompany the annual report and must contain the following:

- a map of the area submitted for FTG (scale 1:15 840);
- the forest unit designation requested and previous FU designation; and
- a short description of the survey system used by the company and a summary of results.

A stand is FTG when: it is at or above the minimum stocking standard; the total mean height of the working-group species is at least one metre; its mean growth rate meets the appropriate standards in Table C.1; and it is judged to be essentially free from competing vegetation of other species. If the crop species, for reasons other than competing vegetation of other species, is unable to meet the measures of growth rate, it may be accepted as FTG when it has reached two metres in height.

The data which form the basis for the FTG standards were obtained from regenerated stands of Crown lands in the Northern, North Central, and Northwestern regions of the MNR. The data for jack pine were obtained in 1977 and those for black and white spruce in 1979. The height/age relationships are similar to those obtained from experimental plantations (R.E. Mullin, Ontario Forest Research Notes, Number 2 [jack pine], Number 15 [white spruce], and Number 19 [black spruce]).

TABLE C.1
FREE-TO-GROW STANDARDS

WHITE SPRUCE PLANTED		
Minimum total height		1 m
Minimum current height growth		20 cm
Minimum previous year's height growth		15 cm
Probable age of 2+2 stock from planting	8 years	
BLACK SPRUCE PLANTED		
Minimum total height		1 m
Minimum current height growth		20 cm
Minimum previous year's height growth		15 cm
Probable age of 2+2 stock from planting	6 years	
BLACK SPRUCE NATURAL (usually deeper peats)		
Minimum total height		1 m
Minimum current height growth		12 cm
Minimum previous year's height growth		10 cm
Probable age from seed	11 years	
JACK PINE		
Minimum total height		1 m
Minimum current height growth		25 cm
Minimum previous year's height growth		20 cm
Probable age from year of initiation of regeneration:		
Bare root (2+0)	5 years	
Container	6 years	
Seed	7 years	

A summary will be included in the respect of assessment as detailed in Section 6.6 of the Timber Management Planning Manual for Crown Lands in Ontario.

5.1 Requisition for Nursery Stock and Tree Seed

The approved forms for requisition of nursery stock or tree seed should be completed and submitted with the Annual Work Schedule. This should be done in consultation with the Crown representative who will know the regional allocation of planting stock by mid-September.

5.2 Nursery Stock Standards

The MNR agrees to supply nursery stock meeting the specifications which must be developed and included in these ground rules or as approved in the Annual Work Schedule, and will provide a list of those stock parameters for each shipment. The Timber Management Plan shall state the size classes desired by species. The availability of certain stock sizes or classes will be dependent upon the MNR's ability to grow the desired stock.

Where in any year the MNR knows it cannot supply a specific class of nursery stock, the company shall be advised of this fact no later than the fall preceding stock shipment. The company may then advise the MNR if it wishes to revise its stock request.

The company agrees to inspect its designated nursery stock during the fall of each year prior to the stock shipment accompanied by a designated MNR representative. The company will advise the MNR if, as a result of this inspection, it decides the nursery stock should not be shipped during the following year.

If more than 15 percent of the planting stock is cull, the company may refuse to accept the stock. A cull tree is one that fails to meet all of the specifications for the appropriate stock, or as agreed to in the Annual Work Schedule, or which has detrimental mold or detrimental flushing or abnormalities considered to significantly affect plantation performance. In addition, the company may perform pressure bomb readings or other tests to determine the morphological and physiological condition of the stock.

The agreed-upon shipping date for container stock will be based upon:

- the silvicultural requirements for best establishment and growth of the trees to be planted;

- the MNR's projection of when the stock meets the standards required under normal growing conditions; and
- the company's operational requirements.

In the event container stock designated for the company does not meet the minimum size standard at the agreed-upon shipping date, the company may elect to set aside the minimum standard and accept the stock for shipment.

In the event that the company refuses to accept a shipment, the MNR will attempt to provide replacement stock compatible to the area at a time agreeable to the company. Prior to the shipment of any stock that the MNR deems marginal, the company will be asked to assess its acceptability.

If a planting project is delayed because of the unavailability of acceptable stock, it will not constitute non-performance by the company under paragraph 40 of the Forest Management Agreement.

If unavailability of suitable stock causes a delay long enough that it is mutually agreed that an area previously site prepared in accordance with an approved annual plan has to be site prepared again, the Crown will pay for the retreatment according to the approved schedule of rates.

The MNR will deliver nursery stock on agreed dates to agreed locations as stated in the approved annual plan or subsequent agreements. The company will be responsible for unloading the nursery stock. When the company has inspected the stock at the time of delivery and has signed a receipt, the stock will be deemed to have been accepted by the company for planting. When the point of delivery is the stock-production facility a rate of compensation for delivery to the site will be negotiated before approval of the Annual Work Schedule.

5.3 Site Preparation

5.3.1 Multiple Treatments

Sites which require more than one site-preparation treatment, excluding altered logging methods, will be identified in the Annual Work Schedule and mutually agreed to.

5.3.2 Prescribed Burning

In some cases, prescribed burning is the most appropriate site-preparation technique. If the use of fire is prescribed and agreed to as an acceptable site-preparation treatment, either primary or final, the MNR will conduct the treatment and will pay the costs.

Following the submission of the Timber Management Plan, the company and MNR officials will draft a tentative prescribed-burning program for the same period. Areas scheduled by agreement for prescribed burning on which the MNR fails to execute by a mutually agreed-upon date of the same year may be site prepared by the company using the second-best alternative, and compensated for, at the appropriate site-preparation rate. Alternative areas for site preparation may be proposed when this occurs.

5.4 Tending

The responsibility for planning and executing ground or aerial herbicide spray programs within the FMA area will be the company's.

Tending will be carried out as required according to approved prescriptions, preferably before competition interferes with growth and survival of conifers. The tending may involve one or more treatments. Where tending to maintain growth and survival after free-to-grow status has been established is required, it will be at the company's expense.

The parties agree in the event that appropriate herbicides are not or cease to be licensed for forestry use in Ontario, the company's obligation to tend if necessary will no longer hold. On areas where regeneration has already been initiated, the company will not be required to retreat failures, if such failure is agreed to be the result of the non-treatment due to the lack of suitable herbicides. On areas where regeneration has not been initiated, the MNR reserves the right to refuse to approve any treatment and shall not require the company to treat sites where the regeneration may be expected to fail if tending cannot be done because of the lack of suitable herbicides.

Generally, "tending" refers to chemical tending. If the use of chemicals for tending is restricted, manual tending may be proposed, at the company's option, and compensated at a mutually agreed-upon rate.

The company will be responsible for purchasing, handling, and storage of all necessary chemicals and will be compensated for actual cost of chemical purchase.

Herbicide spray areas will be identified in the Annual Work Schedule and a summary of potential spray areas provided to the MNR by November 30th of the year previous to the year of planned spray operations with supporting documentation.

The MNR will evaluate the projects and indicate approval to commence preparation of detailed descriptions by mid-January. Detailed project descriptions will be submitted as attachments to the Annual Work Schedule at least thirty days prior to the implementation of the final projects or earlier if required for public review.

The MNR will review all final project descriptions, and the final spraying plan will be announced to the public, either jointly by the MNR and the company or by the company alone, at least thirty days prior to the implementation of the project.

The company will be responsible for obtaining the necessary approvals and permits from the Ministry of the Environment.

5.5 Forest Protection

The MNR will protect, where necessary, Crown forests from insect damage by planning, publicly announcing, and executing insecticide spray programs.

The company will participate in the insecticide spray program by assisting in the identification and mapping of affected areas and in the assessment of potential damage to forested lands within the agreement area and in recommending to the MNR the specific areas that should be sprayed to provide the required levels of protection.

5.6 Treatment of Failures

5.6.1 Introduction

The company will assess the stocking after areas have been treated or harvested, as described in Section 4.2 of this appendix. If the stocking is below the minimum agreed to in the ground rules, the company will reforest the area according to paragraph 27(2) of the Forest Management Agreement. Areas smaller than eight hectares need not be considered.

Where regeneration has failed, and the company has been required to retreat the area, the company will not be paid for any necessary site preparation or for the regeneration treatment. Trees or seed will be supplied free of charge as required.

5.6.2 Early Failures

Failure of regeneration is sometimes obvious before the fifth-year assessment. Two examples illustrate this:

- mortality of seeded jack pine from frost or drought in the first or second year; and
- mortality of planted trees in the first or second growing season.

Where failures are obvious before the fifth year it is to the company's advantage to do the retreatment sooner since costs usually increase in older cutovers.

5.6.3 Failure of Natural Regeneration

Where natural regeneration methods have been used, such as strip clear cutting, and they have failed, it is usually necessary to regenerate artificially. If this is not possible or reasonably economical, the area may be lost to forest production, or there may be a long delay in reaching minimum stocking and free-to-grow status for inclusion in the MAD.

5.6.4 Other Failures

Where a burn was prescribed for site preparation and it was not carried out or was not successful for any reason, the company will do the site preparation by the next best alternative and will be paid according to the rates in the agreement.

5.6.5 Repeated Failures

The Crown representative and the company may mutually agree, after there have been two or more failures on any one particular area, that further retreatment is uneconomical. On other areas, such as very shallow soils, where natural regeneration was prescribed and failed, it may be agreed that retreatment is not practical and the area may be classed as non-treatable.

5.7 Not Satisfactorily Regenerated Lands

Not satisfactorily regenerated lands (NSR) are those lands which do not meet free-to-grow standards at the execution of the agreement. These lands require a survey to determine classification. Survey instructions and definitions of NSR classes can be found in A Manual for the Survey of Not Satisfactorily Regenerated (NSR) Lands (OMNR, 1980).

The NSR classes are defined in Appendix A of this manual.

5.7.1 NSR Classes 2 to 5

A company having an FMA is required by the terms of the agreement to reforest an average of at least 5 percent of the NSR class 2 and 3 lands each year. It is not considered economically feasible to reforest the class 4 and 5 lands.

It is recognized that stands may change their NSR class over time. Some stands may require a different treatment from that originally considered, some stands may reach FTG and no longer require any treatment, and some stands may have moved into class 4 or 5 and no longer be economically treatable. This does not change the requirement to reforest NSR lands at the agreed-on rate until an amount of NSR land equal to that originally classed as NSR class 2 and 3 lands have been reforested. This may occur before the end of the first twenty-year period of the agreement.

If both parties wish, a new co-operative NSR survey may be done and new terms may be agreed to for the regeneration of the redefined original NSR lands.

5.7.2 NSR Class 6

NSR class 6 lands were not included in the schedule of NSR lands in the agreement, and there is no requirement for a company to reforest them. They may, however, be reforested at the option of the company as part of the NSR obligation if approved in the Annual Work Schedule. This section states how they will be dealt with.

On areas that have been regenerated by the MNR and that have not had the fifth-year stocking assessment at the time the NSR survey was done, it is the responsibility of the MNR to do the stocking assessment and to ensure that regeneration reaches the minimum stocking agreed to in the ground rules. The company will do any necessary tending until the areas reach FTG and will be paid at the rates in the agreement.

Areas that have not been regenerated by the MNR and that have not had the fifth-year stocking assessment at the time the NSR survey was done may be treated by the company, at its option, to bring them to minimum stocking standards. The MNR will pay for such treatments according to the agreement. If the company elects not to regenerate the area, there may be a considerable delay before the area reaches minimum stocking level and FTG status and therefore becomes eligible for inclusion in the base for the MAD calculation.

Where NSR 6 areas, which have received a regeneration treatment by the MNR, require treatment, the company may be asked to treat the area and will be paid at a rate to be negotiated in the Annual Work Schedule. If, however, agreement cannot be reached on a negotiated rate, the MNR may retreat the area at its cost. If an area is not economically treatable, it may be classed as non-treatable productive forest land.

Areas which have reached minimum stocking standards, do not need tending, but have not reached FTG status because of lack of height growth may be reclassified as FTG as soon as the appropriate height or height growth has been reached. If tending becomes necessary before this time it will be the responsibility of the company and will be paid for at the rates in the agreement.

5.8 Non-Treatable Productive Forest Areas

Areas of eight hectares or more of productive forest on the agreement area which have been harvested, burned, or on which extensive windthrow or extensive damage by insects and disease has occurred may be classed as non-treatable. A non-treatable area is defined as an area where extremes in topography, shallowness of soils, excessive rock, poor drainage, or inaccessibility make it uneconomic or impractical to treat. Sites damaged through improper harvesting practices shall not be deemed to be non-treatable.

The classification of an area of eight hectares or more as non-treatable will be by mutual agreement between the company and the MNR and will be identified in the annual report.

These areas will be assessed in the fifth year after harvesting or other disturbances to determine the working group and whether the area meets minimum stocking standards.

If the company wishes to attempt experimental regeneration treatments on some of these areas, payment will be made according to the approved schedule of rates, provided the treatment of such areas is approved by the MNR. Section 27(2) of the agreement will not apply to any area declared non-treatable.

5.9 Lesser-Cost Regeneration Treatment

In some situations a lesser-cost regeneration treatment may be approved and paid for on a site that would normally receive a more expensive treatment. If this lesser-cost treatment fails or results in less than desirable stocking the more expensive treatment may have to be applied in order to regenerate the area. In this situation, the MNR may make an additional payment equal to the difference between the lesser-cost treatment and the more expensive treatment as indicated in the approved schedule of rates. Site preparation will only be paid for once.

5.10 Cone Collection

If the company elects to undertake a cone-collection program to provide some or all of the seed for the forest in addition to the MNR's own program on the agreement area, the MNR will pay the company at the district cone rates then currently in effect. The MNR will be responsible for the cost of transporting, extracting, and storing seed collected by the company and will issue specific company source seed numbers. The company will have first rights to seed collection in specific stands identified in the Annual Work Schedule. In addition, the company will have first rights to any seed and nursery stock grown from seed collected by the company and identified under the company seed-source numbers.

5.11 Silvicultural Funding in Lieu of Access

When an alternative to an all-weather road is mutually agreed to as a preferred means of providing access for silvicultural operations (i.e., low-standard and temporary gravel roads, machine-access trails, helicopter or all-terrain-vehicle transport), the company may apply at the Annual Work Schedule stage and the MNR may approve additional compensation for silvicultural treatments to be determined annually, provided they meet the desired objectives and standards of accomplishment.

5.12 Company Invoices

The company shall submit to the MNR invoices in triplicate setting out all the details of the payments sought under the agreement and containing the written certification of a responsible employee of the company that the invoice is accurate, true, and complete (paragraph 32(2) of the Forest Management Agreement). Invoices shall be accompanied by FRI map(s) at a scale of 1:15 840 showing the location of road construction, reconstruction, and silvicultural work performed. The map accompanying invoices for road maintenance should be at a scale of approximately 1:125 000.

Where the company invoices for silvicultural treatments are submitted, the invoices shall be certified for the company by a professional forester stating that the treatments have been performed satisfactorily, conform to the ground rules, and that the attached map(s) accurately show the extent, location, and type of treatment.

5.12.1 Road Construction and Reconstruction

Roads that have been completed in any year (except for gravelling in any year) will qualify for 80 percent of that year's rate per mile. When gravelling has been completed in the following year, a final payment will be made of 20 percent of that year's rate per mile as stated in the Annual Work Schedule for that class of road.

The Crown representative and the company will conduct a joint inspection of the road or section of road after which a final invoice will be submitted to the MNR.

When invoices are received from the company for completed sections of road the Crown representative will certify that the road conforms to the Annual Work Schedule in location, that the mileage is correct, and that the invoice charges conform to the rates agreed to in the Annual Work Schedule.

It is the responsibility of the district manager to approve the invoice for road construction or reconstruction providing that there are no significant deviations from the road specifications as set forth in the agreement and from the costs approved in the Annual Work Schedule.

5.12.2 Road Maintenance

When invoices are received from the company for road maintenance, the Crown representative shall certify that the roads actually maintained were constructed or reconstructed under the agreement, and the invoice charges conform to the agreement.

5.12.3 Silvicultural Treatments

For each on-going silvicultural project, the company may submit an invoice to the MNR no more frequently than every four weeks.

On completion of a silvicultural project, a map showing the area will be submitted to the Crown representative and within two weeks of receiving this map, it will be verified that the map is accurate or, in conjunction with the company, the area will be revised to a mutually agreeable figure. When agreement has been reached, a final invoice for that project will be forwarded to the MNR.

When invoices are received from the company for silvicultural treatments, the Crown representative shall certify that the treatments have been performed satisfactorily and conform to the ground rules and that the attached map(s) accurately show the extent, location, and type of treatment.

The same area figure used to record and report silvicultural operations will be the basis for payment. Untreated areas of two hectares or more (or as agreed to in the ground rules) will be identified on the treatment map and will not form part of the area for payment. These identified untreated areas are not to be included in the recording or reporting of silvicultural operations.

6.0 Wasteful Practices

With some prescriptions it may be necessary to leave, fell, or remove from the site but not utilize or pay stumpage charges on certain trees. These actions could be interpreted as wasteful practices under the Crown Timber Act. Since the intent is to improve the productivity of the site for commercial species, such practices will not be deemed wasteful provided they are described in the prescriptions or detailed in the Annual Work Schedule and approved.

7.0 Areas of Modified Operations or Reserves

No additional areas of modified operations or reserves will be imposed during the five-year term of an approved Timber Management Plan except under exceptional circumstances or in areas allocated by amendments. Where operations on an allocated area are precluded (i.e., reserves) by the MNR for a period normally of ten years or greater the affected allocated areas are subject to paragraph 34 of the agreement.

8.0 Research or Tree Improvement Areas

It is agreed that certain areas may be set aside for experimental studies of regeneration techniques or for the purpose of tree improvement programs such as seed collection areas or seed orchards.

These programs can make valuable contributions towards achieving the objectives of the Forest Mnagement Agreement and should be encouraged. The areas involved may be on the most accessible and more fertile sites and will be agreed to by both parties at the time they are required. Areas designated as "Research or Tree Improvement Areas" will not be considered withdrawals under paragraph 34 of the agreement, but will be recorded and treated according to Section 7.0 of these ground rules.

9.0 Withdrawals

Where an individual area dedicated to uses other than wood production is two hectares or less, the company shall not request that the area be withdrawn.

Should the MNR grant cutting rights, at some future date, on withdrawn areas the company will have the first right of refusal on the timber from the area.

10.0 Overcutting and Undercutting

Overcutting will be judged on the basis of MAD adjusted for allocated areas where cutting was not permitted.

Undercutting will be judged on the basis of the MAD adjusted for allocated areas where cutting was not permitted and any declared surplus.

An example in Table C.2 illustrates the calculations involved in determining damages for overcutting and undercutting.

In the example in Table C.2, overcutting has occurred in the jack pine working group only. Regeneration at the company's expense must be clearly in addition to the regular amount of regeneration that was listed in the Annual Work Schedule and that was based on the normal harvest.

The area, forty hectares in the jack pine working group, subject to overcutting damages must be selected. The selection will be done, if possible, by mutual agreement between the company and the Crown representative, but if this is not possible, the Crown representative will make the final decision. The criteria used will be such things as:

- the last part of the working group that was cut;
- any additional areas allocated in revisions to the last Annual Work Schedule in the five-year period; or
- an area with representative site conditions.

Undercutting subject to damages has occurred in the poplar working group only. Stumpage charges are calculated for the total cut by species within the working group. Estimates can be made by using the NMV per hectare of the allocated MAD for the undercut working group and the stumpage rates for each species. If such estimates are not feasible, the basis for calculation which may be used is the average NMV per hectare for the working group based on the entire agreement area.

TABLE C.2

CALCULATION OF AREA SUBJECT TO DAMAGES FOR OVERCUTTING OR UNDERCUTTING

Working Group or Forest Unit	MAD	Reserves	Declared Surplus	Adjusted MAD	Actual Cut	Overcut or Undercut	10% Allowance	Area Subject to Damages
Jack Pine	420	20	20	400*	480	+80	40	+40
Spruce	220	10	-	210**	200	-10	21	-
Poplar	300	20	40	240**	160	-80	24	-56
White Birch	100	10	20	70**	65	- 5	7	-

* Adjusted MAD for calculation of overcutting = MAD - Reserves

** Adjusted MAD for calculation of undercutting = MAD - (Reserves + Declared Surplus)

TABLE C.3

CALCULATED STUMPAGE CHARGES PER HECTARE

Species within Poplar WG	Calculated Stumpage Charges per ha ($)
Jack pine	6
Spruce	18
Poplar	35
Birch	5
Total	$64

If the working group had been cut (240 ha) then the stumpage would have been $64 per hectare. The amount of undercut was 56 ha (240 - 24(10%)) less the actual cut (160) = 56 ha. Therefore, the calculated damages through loss of stumpage to the Crown is 56 x $64 = $3 584.

11.0 Documentation of Yield Increase

One of the incentives provided in the FMA is the assurance that any increase in yield or MAD that is the result of a treatment applied on behalf of the company at its sole expense shall be subject to one-tenth of the stumpage charge applicable at the time the increase is harvested.

The implementation of this paragraph of the agreement requires that the increases be appropriately documented and that the manner and time of application for reduced stumpage charges in relation to any increase in yield be clearly established.

Appropriate methods of documentation of increased yield must be agreed to for each type of treatment which has the increase of yield as the objective. The methodology must be developed and included in the ground rules prior to the initiation of any such treatment.

12.0 Third Party Operations

All ground rules shall include the following paragraphs:

> These ground rules apply to the ______________________ Forest including those parts which are subject to Third Party Licences.

Payments to the Company for silvicultural treatments on any part of the Agreement area which is subject to Third Party operations shall, to the extent that such treatments are performed by the Third Party, be passed through to the Third Party by the Company.

Payments to the Company under paragraph 31 for the construction, reconstruction, and maintenance of roads on any part of the Agreement area which is the subject of Third Party operations shall, to the extent that such road construction, reconstruction, and maintenance is performed by the Third Party and provided that the Third Party also performs all the silvicultural treatments required in the approved Annual Work Schedule on the area subject to the Third Party operations, be paid over to the Third Party by the Company.

Where wood on an FMA is directed by the MNR to a Third Party under Section 21 or 30(4) of the Agreement, the directed Third Party will be responsible for implementing the harvest and regeneration practices required by the ground rules and recommended by the FMA holder.

The Company and the MNR agree that any Crown Timber Licence issued to a directed Third Party will include a clause stating harvesting and regeneration practices specified by the Company, consistent with the Ground Rules, must be followed.

The Ministry of Natural Resources will provide to the Company a copy of the licence, cutting approvals, and an annual scaling summary at the same time they are provided to the Third Party.

Should the directed Third Party default on the regeneration treatment or retreatment, the Company may carry out such treatments at a price to be negotiated annually with the Ministry of Natural Resources.

13.0 Forestry Operations on Mining Claims

Throughout the agreement area productive forest land may have been staked or leased for mining potential. Should the company undertake forestry activities on any mining leases or claims, it is agreed that the company will assume full responsibility for all forestry activities on these areas and will hold the MNR free from any damages from company activities.

14.0 General

It is recognized by both parties that there will be a gap between the cutover and the area regenerated. Further, it is understood that some sites will be untreated and left for natural regeneration. Consequently, the area of total treatment over the period of these ground rules may not balance with the total area cutover.

Existing and mutually agreed-upon wood directives will be honoured under the agreement.

15.0 Amending the Ground Rules

The ground rules will be rewritten every five years to provide considerable flexibility in adapting to new developments, but there may still be occasions when either or both parties to the agreement wish to amend them. The ground rules must include a statement specifying the procedures for amendment. A suggested statement is:

> These ground rules may be amended in accordance with the agreement. Any amendments must be consistent with the management plan in effect, and shall be made in writing and jointly authorized by a regional director of the Ontario Ministry of Natural Resources and the [title of officer] of the [name of company].

APPENDIX D: MANAGEMENT UNITS IN ONTARIO, 1985

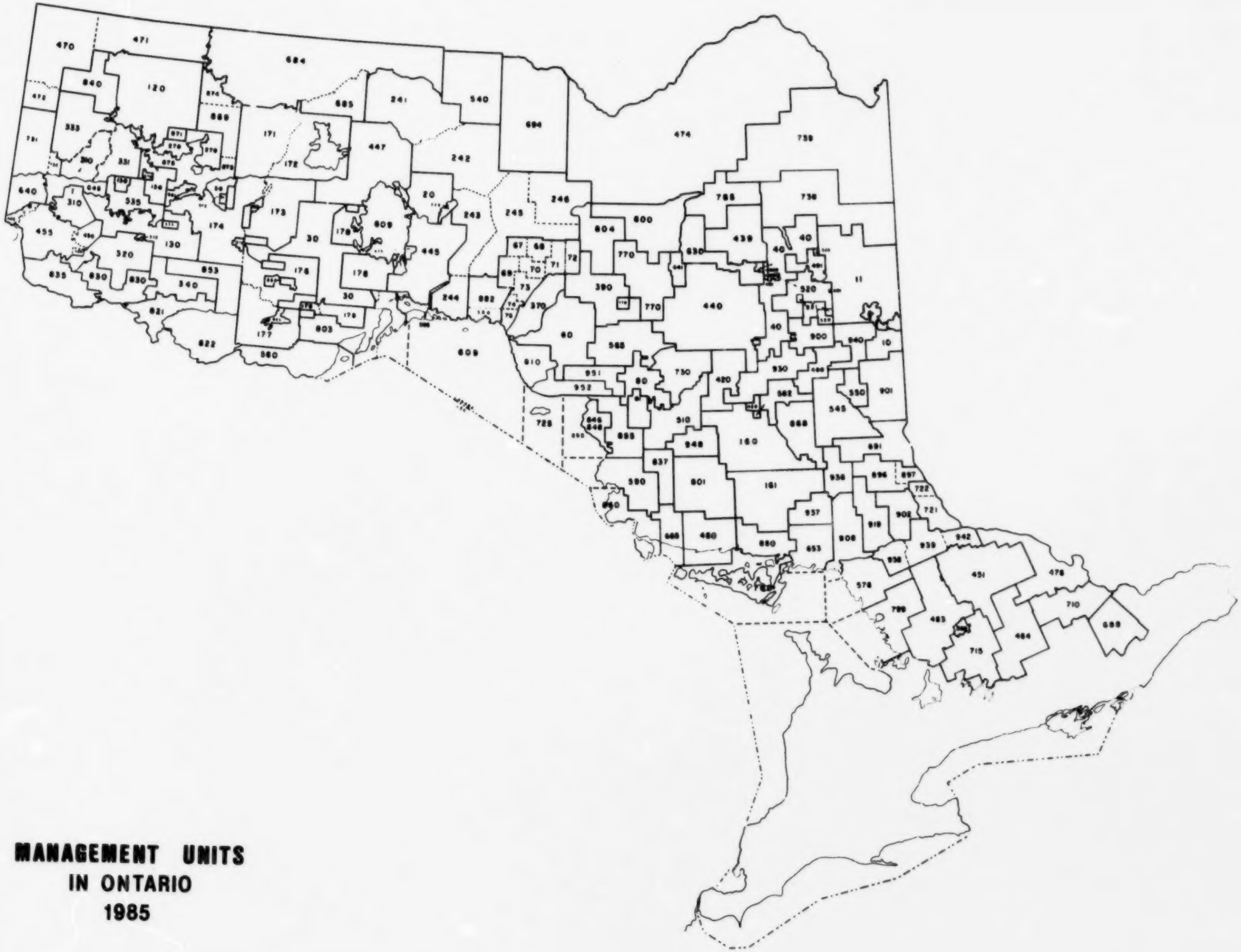
Region	Management Unit			District	Management	Area (ha)
	Name	No.	Status*		Period	
NW	ABITIBI S.L.O.	050	3	SL	8505	87 916
	AULNEAU	455	0	KE	6686	504 382
	BERENS RIVER	470	0	RL	INACT	1 565 420
	CARIBOU EAST	172	3	SL	8505	680 412
	CARIBOU WEST	171	3	SL	8505	553 868
	DRYDEN	535	0	DR	6686	262 809
	E. PATRICIA FOREST	331	1	DR	8404	323 771
	ENGLISH R. FOREST	174	1	IG	8000	626 709
	KEEWATIN	640	0	KE	6686	185 436
	KENORA	645	0	KE	6686	169 746
	L. ST. JOSEPH	684	0	SL	INACT	2 221 607
	L. WOODS FOREST	310	1	KE	8404	327 456
	MANITOU FOREST	320	1	FF	8202	391 010
	MINAKI	731	0	KE	6686	416 316
	PAKWASH FOREST	333	1	RL	8404	397 698
	RAINY LAKE	830	0	FF	6686	297 550
	RAINY RIVER	835	0	FF	6686	340 406
	RED LAKE	840	0	RL	6686	317 197
	SEINE R. FOREST	340	1	FF	8202	269 054
	SIOUX LOOKOUT	875	0	SL	6686	1 069 315
	TROUT L. FOREST	120	1	RL	8404	975 854
	WABIGOON	130	3	DR	7191	725 921
	Count: 22				Total:	12 709 853
NC	AUDEN	020	3	NG	7191	278 927
	B. STURGEON	178	3	TB	7595	425 612
	BIG PIC	067	3	TR	7798	665 265
	BLACK R. FOREST	370	1	TR	8101	252 711
	BRIGHTSANDS FOREST	173	1	TB	8505	464 789
	CURRENT R.	179	3	TB	7595	119 044
	DOM-ARMSTRONG	447	3	NG	7595	814 798
	DUSEY	540	0	GE	INACT	586 400
	FLANDERS	821	0	AT	8505	275 526
	FORT WILLIAM	560	0	TB	8202	448 799

Region	Management Unit			District	Management	Area (ha)
	Name	No.	Status*		Period	
	ISLANDS	609	0	NG	INACT	362 810
	L. NIPIGON FOREST	445	1	NG	8101	612 926
	LITTLE CURRENT	694	0	GE	INACT	1 181 800
	LONGLAC FOREST	245	1	GE	8505	659 041
	MAT-DOG R. FOREST	177	1	TB	8505	880 000
	NAKINA FOREST	242	1	GE	8505	736 031
	ONAMAN	775	0	NG	INACT	25 900
	PORT ARTHUR	803	0	TB	8202	697 355
	QUETICO P.P.	822	0	AT	PARK	352 098
	SAPAWE	853	0	AT	8505	297 973
	SHEBANDOWAN	865	0	TB	8202	53 993
	SPRUCE R. FOREST	030	1	TB	8101	752 349
	STEEL RIVER	380	0	TR	7696	242 484
	GERALDTON	243	3	GE	7696	408 987
	OGOKI	241	3	GE	7696	756 069
	Count: 25				Total:	12 351 687
N	ALBANY	474	0	MO	INACT	2 590 000
	AUSTIN	080	0	CP	7292	243 419
	CHAPLEAU	510	0	CP	8404	391 741
	COCHRANE	520	0	CC	8101	310 759
	COCHRANE FOREST	521	1	CC	8303	66 147
	COSENS FOREST	439	1	KA	8000	1 610 449
	ELK LAKE	545	0	KL	6989	467 621
	ENGLEHART	550	0	KL	7898	120 155
	GARDINER FOREST	401	1	CC	8303	105 677
	GOGAMA	582	0	GO	8101	186 838
	HEARST	600	0	HE	8101	530 528
	IROQUOIS F. FOREST	011	1	CC	8000	945 235
	IROQUOIS F. SOUTH	010	3	KL	7393	143 299
	KAPUSKASING	630	0	KA	7999	294 863
	MISSINAIBI	730	0	CP	8404	351 627
	MOOSE RIVER	738	0	CC	7999	1 010 110
	MOOSONEE	739	0	CC	INACT	1 832 127
	NAGAGAMI FOREST	390	1	HE	8202	449 616
	OBA	770	0	HE	7696	517 352

Region	Management Unit			District	Management	Area (ha)
	Name	No.	Status*		Period	
	OPASATIKA	785	0	KA	INACT	366 317
	PINELAND FOREST	420	1	CP	8202	317 829
	PITOPIKO	804	0	HE	7494	346 751
	R. MALETTE FOREST	930	1	TI	8202	356 428
	SHINING TREE	868	0	GO	7191	321 165
	SMOOTH ROCK F.	040	3	CC	8101	662 312
	TIMISKAMING	N01	0	KL	7999	423 392
	TIMMINS	900	0	TI	8101	197 710
	TIMMINS FOREST	400	1	TI	8303	189 495
	U. SPANISH FOREST	160	1	GO	8000	714 665
	WATABEAG	940	0	KL	7999	207 885
	WENEBEGON	948	0	CP	8404	210 041
	Count: 31				Total:	16 481 553
NE	BLIND RIVER	480	0	BL	8505	422 515
	GOULAIS-BATCH	590	0	SS	8505	370 867
	JACK PINE R.	061	0	WA	8505	115 254
	KILLARNEY	653	0	SU	8000	402 840
	KIRKWOOD	665	0	BL	8505	147 123
	L. SPANISH FOREST	161	1	EP	8000	661 110
	LATCHFORD	691	0	TE	8000	330 164
	MAGPIE FOREST	565	1	WA	8404	441 128
	MANITOULIN	700	0	EP	8000	748 555
	MATTAWAN	721	0	NB	8000	209 581
	MICHIPICOTEN	725	0	WA	INACT	18 545
	PESHU LAKE	801	0	BL	8505	532 615
	PUKASKWA N.P.	810	0	WA	PARK	250 000
	RANGER LAKE	837	0	SS	8505	190 161
	SAULT S. MARIE	860	0	SS	8505	331 542
	SPANISH RIVER	880	0	EP	8000	227 175
	L. SUPERIOR P.P.	846	0	WA	8505	174 714
	TEMAGAMI	896	0	TE	8000	274 211
	TIK	855	0	WA	8505	426 729
	TOMIKKO	902	0	NB	8000	183 841
	TROUT L.	908	0	SU	8000	358 575
	VERNER	919	0	NB	8000	243 838

Region	Management Unit			District	Management	Area (ha)
	Name	No.	Status*		Period	
	WANAPITEI	936	0	SU	8000	390 056
	WASI	938	0	NB	8000	412 990
	WAWA	951	0	WA	8505	356 384
	WHITE R. FOREST	060	1	WA	8303	575 789
	Count: 26				Total:	8 796 302
Alg.	ALGONQUIN PARK	451	3	AP	8000	768 462
	BANCROFT	464	0	BA	8000	516 341
	BONNECHERE	476	0	PE	8000	474 988
	BRACEBRIDGE	483	0	BR	8000	621 421
	FROST CENTRE	566	0	BR	8000	23 603
	GEORGIAN BAY	576	0	PS	8000	412 259
	MADAWASKA	710	0	PE	8000	335 412
	MINDEN	715	0	MD	8000	449 415
	PARRY SOUND	799	0	PS	8000	448 339
	Count: 9				Total:	4 050 240
E	LANARK	688	0	CA	7898	20 651
	Count: 1				Total:	20 651
Total Count:	114			Grand Total		54 410 286

*Status
0 - Crown management units
1 - Forest Management Agreement
3 - Long-term licences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MANAGEMENT UNITS IN ONTARIO 1985